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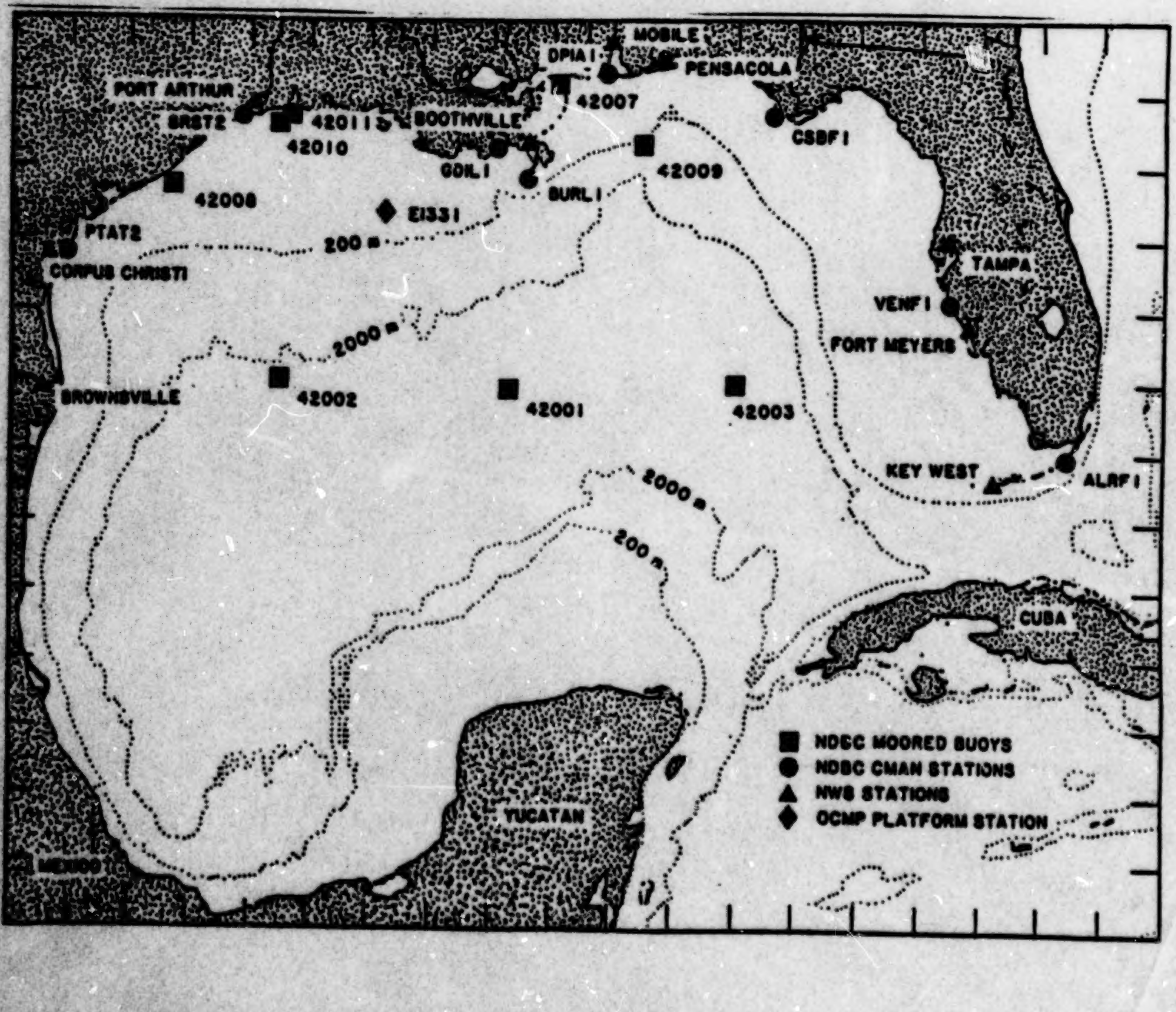
MMS 88-0064

Meteorological Database and Synthesis for the Gulf of Mexico



U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

OCS Study
MMS 88-0064

Meteorological Database and Synthesis for the Gulf of Mexico

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EXECUTIVE SUMMARY

This meteorological summary consists of a compilation of data from a number of sources and a statistical description by month, season and year of the pertinent meteorological variables affecting oceanographic operations in the Gulf of Mexico region. The primary data sets utilized in this study are as follows: National Weather Service (NWS) coastal station data; National Data Buoy Center (NDBC) moored-buoy and marine platform network; NDBC Coastal Marine Automated Network (CMAN) stations; a segment of the Ocean Currents Measurement Program (OCMP) data; National Hurricane Center 101-year storm track data (HURDAT); and the University of Virginia cyclone data set. The coastal data covers the period 1970-1986, while the buoy data exists for only 1976-1986. The CMAN data set spans the period 1985-1987, depending upon which station is considered. The hurricane and cyclone climatologies are for 101 and 100 years, respectively. In addition, a ship-based sea surface temperature (SST) climatology is analyzed by 1° quadrangles for the period 1854-1973. The analyses included in this report should provide useful information on the variability of meteorological conditions in the Gulf of Mexico.

The primary results emphasize the difference between winter and summer means and variances, particularly for the central and northwestern Gulf of Mexico. Winter is characterized by high variability associated with the frequent frontal/cyclogenesis events which traverse the area. Summer is a more quiescent period, except for the occasional variability generated by tropical cyclone systems that may form in or enter the Gulf region between June and November. Transition between the two seasons can occur within a few weeks over most of the Gulf, and therefore, a distinct spring and fall is not apparent.

Thus, this report summarizes the compilation of these data and the associated types of analysis performed. The results delineate how varying atmospheric conditions can affect oceanographic processes in this region. Furthermore, this report identifies a data set that is currently stored in one location and is readily available to the Gulf of Mexico scientific community for use in future research.

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I. INTRODUCTION

1.1 Project Scope

The Minerals Management Service (MMS) identified a need for an improved statistical summary of meteorological conditions in and immediately adjacent to the Gulf of Mexico (Figure 1.1-1). The MMS contracted with Florida A & M University (FAMU) to acquire, archive and manage a database appropriate to the Gulf of Mexico meteorology, with a particular emphasis on those factors having a substantial impact on oceanographic conditions and processes. The data catalog is described in Appendix A and a listing of persons contributing to this data base are located in Appendix B. As support for this overall project scope, FAMU issued a subcontract to Science Applications International Corporation (SAIC) to produce a summary of meteorological conditions in the Gulf.

The thrust of this report is two fold:

- to provide a unified information source and data reference
- to characterize statistically, oceanographically significant meteorological conditions and processes.

The stated scope of this subcontract is to provide a general statistical summary using readily available data. The primary effort was directed at 10- to 15-year time series. As available the 10-year record was to coincide with a corresponding 10-year ocean circulation model run by National Ocean Research and Development Activity (NORDA) (Rhodes et al., 1985). For these intervals, SAIC prepared the observations to be used for analysis. The original observational data sets are to be archived by FAMU for access and use by the Gulf of Mexico oceanographic community.

1.2 General Oceanography

The two exchange ports for the Gulf of Mexico are located in the southwest corner. The Loop Current (LC) enters the Gulf through the Yucatan Straits and exits through the Florida Straits as the Florida Current. Between inflow and outflow, the LC can occupy a range of positions, extending from just north of Cuba to 27½°N. Rarely does the LC proper extend westward of 90°W.

Periodically, an anticyclonic eddy separates from the Loop Current. This separation "tops" or truncates the northward extension of LC. Following separation, these eddies generally move westward at a nominal speed of 5 km/day. Movement of these eddies is a major source of heat, salt and momentum for the central, and in particular, the western Gulf. The eddy-shedding period is not well-documented, but appears to be between 4 and 16 months. Theory, modeling and field data suggest that these anticyclones can foster a range of secondary, yet linked features (such as cold core eddies) having coupled temperature, density and velocity structures. During westward movement and dissipation against the western continental slope, LC eddies tend to dominate oceanographic conditions in the deeper Gulf.

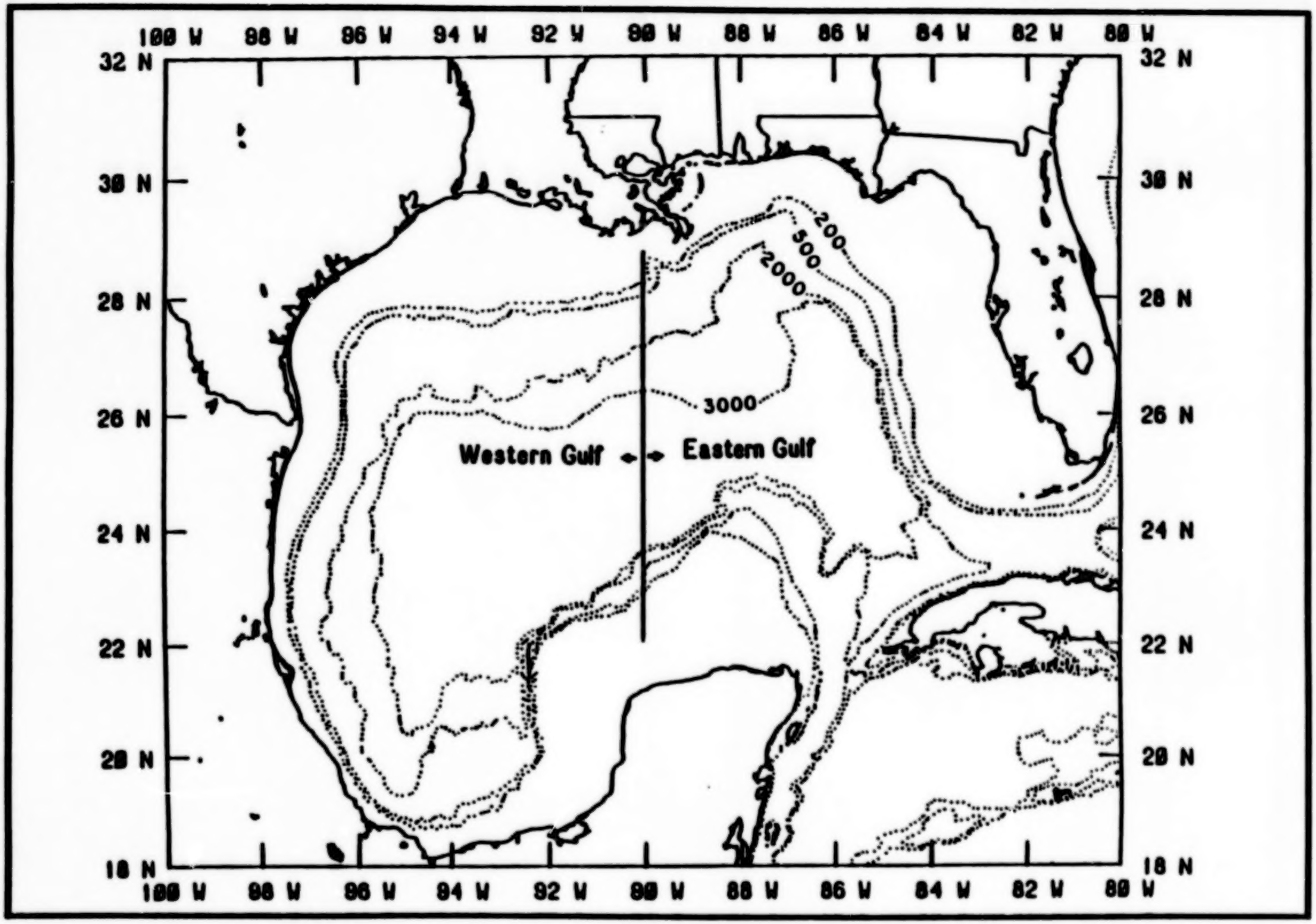

Figure 1.1-1 Gulf of Mexico bathymetric map showing the normal partition of the eastern and western Gulf of Mexico study areas. This also partitions the emphasis on the Loop Current (LC) and LC eddies.

Below the surface layer (nominally 100 m), eddy water is consistently as warm or warmer than the ambient or receiving water, creating a large heat reservoir. In the surface layer, above the seasonal thermocline, an annual temperature cycle occurs. During summer, surface/near surface temperatures are fairly uniform. During cooler months surface water in an eddy tends to be warmer than ambient water. This reflects a vertical heat exchange and the greater heat reservoir in the eddy.

The Gulf is ringed by a shelf, which varies in width from 10 km to over 200 km. The basin geometry means that the shelf orientation rotates through 360°. Data clearly shows that shelf circulation and conditions are often closely linked to the local meteorological conditions. Because the shelf is generally 100 m deep or less, the entire water column is within the region of direct wind forcing and seasonal temperature patterns.

Direction and magnitude of wind stress on water surface is a key influence on circulation and exchange processes. Similarly, seasonal variation of air temperatures is a major control on magnitude and direction of heat flux for the shelf waters.

Oceanographic measurements on the shelf indicate the important relationship between alongshore wind stress and currents, although the curved nature of both the coastline and bathymetry can distort or alter this pattern. In the north-central Gulf, presence of and discharge from the Mississippi River has a substantial seasonal impact on salinity and temperature fields of adjacent waters. Even from this cursory presentation, it should be apparent that an understanding of particular meteorological conditions and patterns is fundamental to understanding important oceanographic conditions in the Gulf region.

1.3 General Meteorology

Meteorological conditions which influence oceanographic processes occur over a range of temporal and spatial scales. As a mid-latitude location, the Gulf is seasonally influenced by different types of air masses. The boundary or front between these air masses occurs over a fairly broad band, which in the mean shows an annual north-south cycle. The band of interaction is the region of cyclogenesis associated with frontal boundaries.

Over the continental shelf in the northern half of the Gulf, the characteristic pattern of winds associated with cold frontal passages is a major circulation-producing mechanism, particularly in cooler months. In addition, cold air behind these fronts extracts heat from the shelf and surface waters. The passage of cold fronts is most frequent in winter and virtually absent in summer, with a transition between the two extremes. During winter, many northern fronts "stall" over the Gulf. The exact pattern of any return flow is a subject of current study.

Due to interaction with underlying water, continental air masses coming from the north are successively modified by increasing water vapor content and decreasing air-water temperatures differences. An increasing frequency of fronts and more extreme air-water temperature differences in fall act in conjunction with decreased hours of sunlight to cause local surface water cooling. In part, a reverse process occurs in spring.

During summer the influence of the subtropical high (Bermuda High) increases as the frontal zone between subtropical and mid-latitude air masses moves north and out of the Gulf. Weaker pressure gradients and hence calmer winds associated with high pressure produce less vigorous wind stress forcing of oceanic or. in particular, shelf circulation. During summer, warm fronts tend to move generally from south to north.

A vigorous sea breeze system can develop in a band around the Gulf Coast. This can drive some circulation; however, associated wind speed and direction change rapidly as compared to time required to "spin-up" a steady-state circulation pattern. A time-evolving circulation can occur due to sea-breeze forcing, especially if concern is only about the upper portion of the water column and about transport over limited distances. The coastal wind-wave field has a strong diurnal periodicity where the sea-breeze is well-developed.

Hurricanes move into and develop in the Gulf. Influence is heavily dependent not only on intensity of the hurricane, but its path or trajectory and speed of propagation. The most pronounced oceanographic influence seems to occur on the shelf and slope regions where vigorous hurricane-initiated currents have been measured.

1.4 Organization of Report

The report is organized into seven sections:

- Chapter I - Introduction
- Chapter II - Synoptic Climatology of the Gulf of Mexico
- Chapter III - Summary
- Appendix A - Data Catalog describing the source of each data base utilized in this summary
- Appendix B - List of persons contacted during the compilation of the data catalog
- Appendix C - Statistical Tables (mean, variance, number of possible data points and number of points used) for Sea Surface Temperature (SST), Air-SST, Air Temperature, Atmospheric Pressure and Sensible Heat Flux
- Appendix D - Bi-variate Histograms of Wind Data

The bulk of the data analysis and synthesis is found in Chapter II, where each meteorological data set and associated analyses is described in detail. Meteorological conditions in the Gulf of Mexico, as they relate to the oceanographic processes of the region, are described as well. Chapter II also summarizes the mean SST of the Gulf in 12 individual maps. Chapter III summarizes the available data sets and significant conclusions drawn from the analyses performed on the data. Appendices A and B contain complete listings of the data catalog and list of contacts, respectively. Appendices C and D contain complete statistical analyses of all data used in compiling this report, and are referenced throughout Chapter II.

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II. SYNOPTIC CLIMATOLOGY OF THE GULF OF MEXICO

2.1 Introduction

Climatology of a region is governed primarily by the types of air masses influencing the area on a seasonal basis. Most mid-latitude geographic regions have two distinct seasonal weather patterns, connected to each other by less well-defined transition periods. The region surrounding the Gulf of Mexico fits this scenario very well. The area has well-defined summer (May-October) and winter (December-March) circulation patterns, with two transitional months (April and November) interwoven. Generally, air masses originating over large bodies of water tend to be warm and moist due to the greater heat capacity of water. Continental air masses are notoriously dry and much cooler. The winter air mass structure of the Gulf of Mexico shows the West Florida Shelf region dominated by warm, moist maritime tropical (mT) air, while the central and western Gulf of Mexico is influenced primarily by very cold, dry continental polar (cP) air. However, during summer months, the mid-latitude polar jet retreats northward, allowing mT air to dominate throughout the Gulf of Mexico, and push northward as far as the midwest and Ohio River Valley (Muller and Oberlander, 1978). Figures 2.1-1 and 2.1-2 summarize the air masses that strongly influence the Gulf of Mexico during summer and winter seasons.

Major global circulation features influencing the Gulf of Mexico are the Atlantic subtropical gyre, the Icelandic low, the Pacific high and the Rocky Mountain low. The strength of the Icelandic low during winter months pushes the Atlantic high well south, where its influence can be seen throughout the Gulf of Mexico in the surface wind field. This sub-tropical gyre circulation is responsible for mild winters experienced along the western coast of Florida, as the clockwise flow of air around the high pressure center funnels warm, moist air into this region. The Pacific high migrates eastward and decreases in size during winter, mainly in response to the deepening Aleutian low. This coastward shift in the Pacific high provides little change in climate of the Gulf of Mexico. The major change during winter is provided by southerly migration of the polar front, which brings cold, dry continental polar outbreaks into the Gulf region. Fernandez-Partegas and Mooers (1975) found these polar outbreaks occur at 3- to 10-day intervals from October to April. A different study analyzing major Arctic outbreaks affecting Louisiana found 20 cases over the past 103 years where severe freeze conditions were experienced in the Gulf Coastal region, Mortimer et al. (1988). These events occur about once every 5 years, and appear to be cyclical in nature. The cycle appears to be best fit by the solar sun spot cycle, where the majority of events occur between peaks and lulls in sun spot activity (Mortimer et al. 1988).

Summer circulation is marked by a decrease in size of the subtropical gyre and its migration northward. This process allows the northeast trade wind belt to push further north, influencing the entire Gulf of Mexico. Coincident with Atlantic high repositioning is the northward excursion of the polar front (jet stream), which essentially closes the door to any continental originating air masses in the region. Development of the Rocky Mountain low, in the southwestern United States/Mexico pumps moisture from the Pacific Ocean over Mexico and into

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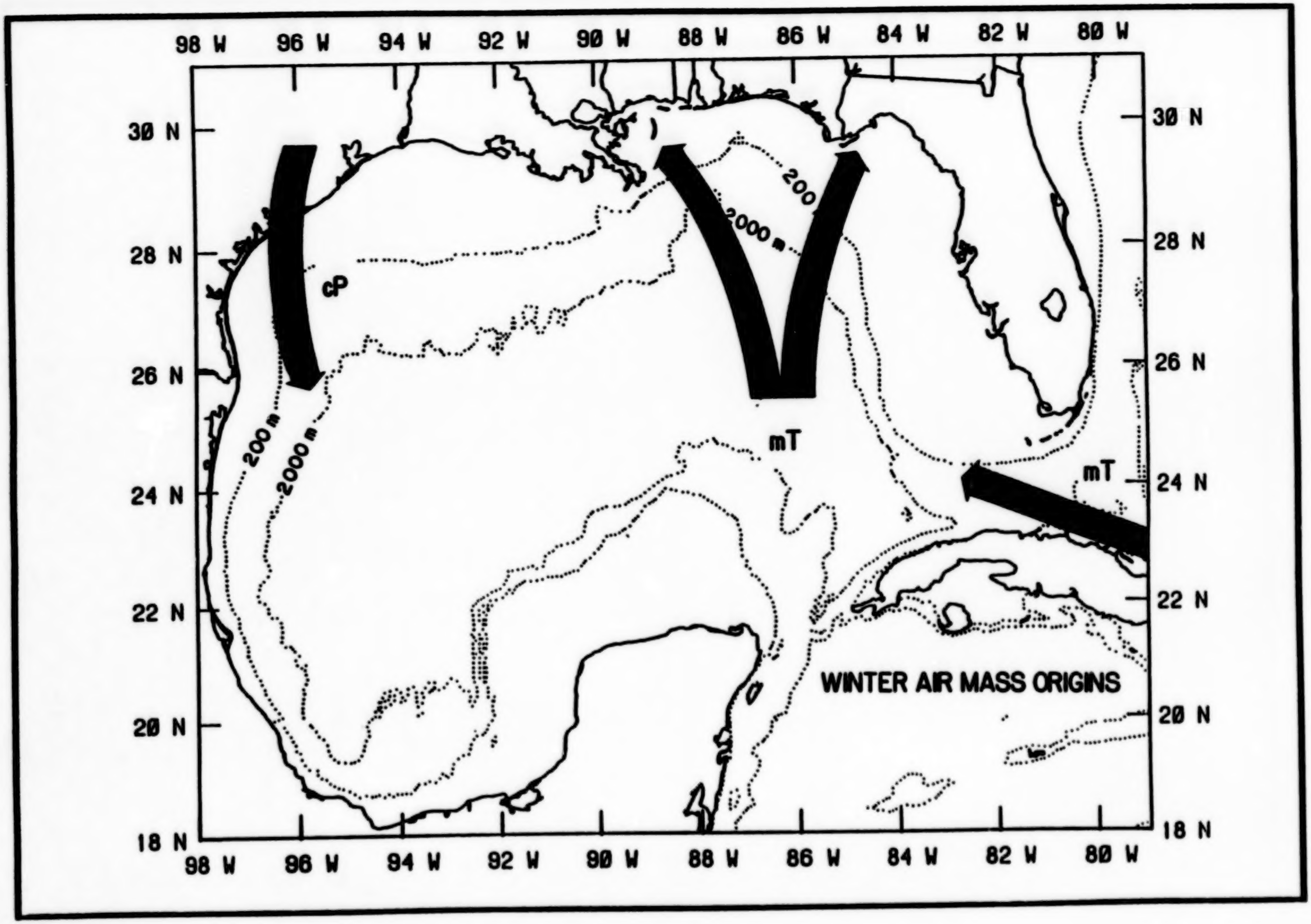

Figure 2.1-1 Description of winter (December-March) air masses influencing meteorological conditions in the Gulf of Mexico and surrounding regions (adapted from Muller and Oberlander, 1978).

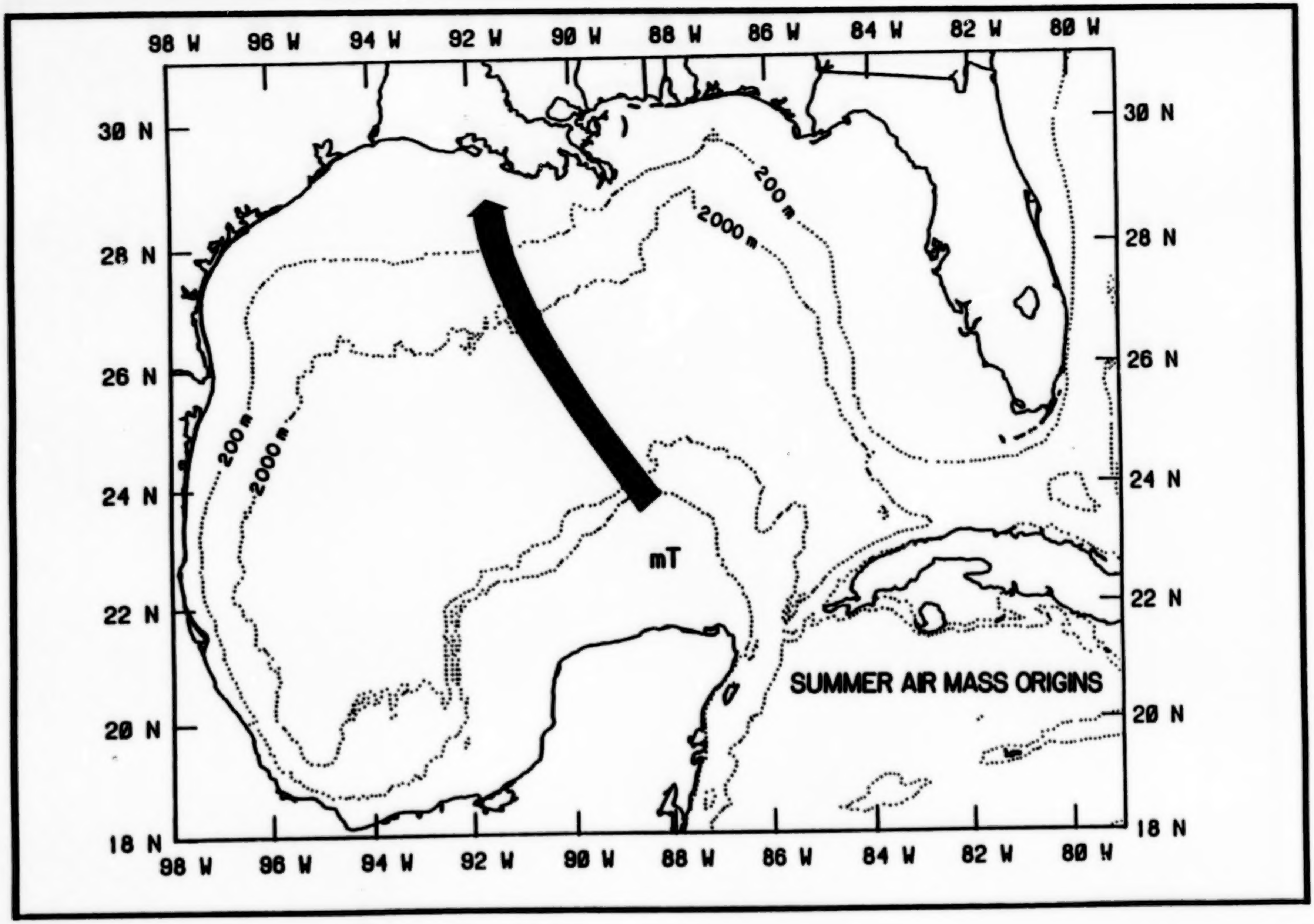

Figure 2.1-2 Description of summer (May-October) air masses influencing meteorological conditions in the Gulf of Mexico and surrounding regions (adapted from Muller and Oberlander, 1978).

the western Gulf of Mexico and Texas. Also, northward movement of the trade wind belt channels tropical cyclones into the Gulf, where they often become major factors in seasonal climatology of the region.

Muller (1977) devised a synoptic climatology for New Orleans, Louisiana, representing a good portion of the northern and central Gulf of Mexico. Using 3 years (1971-1974) of data, he analyzed daily synoptic weather situations for New Orleans at 0600 and 1500 CST (Central Standard Time). These results allowed him to classify the synoptic conditions for this region into 8 all-inclusive types for each day during the study. The 8 classifications and their percent of occurrence are detailed in Table 2.1-1.

Muller's (1977) analysis shows that the region around New Orleans is dominated by Gulf return and the Continental High synoptic scenarios. The former translates into warm, moist mT air from the western margin of a ridge pumped-up from the Caribbean and the eastern Gulf. The latter is generally associated with an anticyclone east of the Rockies, funnelling cool, dry continental air into the region. The Continental High region is restricted to fair weather associated with the core of the high pressure system (Muller, 1977).

Thus, while the Gulf Coast region is subjected to harsh, extreme conditions associated with tropical cyclones, extratropical cyclones and cold Arctic/Polar air outbreaks, warm waters in the Gulf of Mexico provide a buffering agent, keeping the mean climatology of the region quite mild. The following sections, will discuss both the extreme and normal conditions for this region hopefully adding insight into the underlying processes which make this region such an exciting environmental area to analyze and study.

2.2 Data Sets Utilized

The initiation of any climatological survey begins with identification of a clear, concise and accurate data base plan, from which all desired parameters can be obtained. However, dealing with an ocean basin the size of the Gulf of Mexico requires structuring the analyses around available data. This situation arises from sparse oceanic data collection platforms and problems associated with making continuous measurements at fixed locations in the marine environment. Two major drawbacks in any marine measurements program are the extremely high cost of deploying instrument arrays and the subsequent high maintenance costs associated with obtaining reliable data from instruments subjected to the harsh, corrosive environment. In addition, response time to instrument failures is generally quite large (ranging from days to weeks), often resulting in "gappy" data records. Thus, data in this summary are drawn from reliable sources and have been carefully analyzed to insure accuracy and reliability.

Starting points for data compilation were the National Oceanographic Data Center (NODC) in Washington, D.C., and the National Climatic Data Center (NCDC) in Asheville, North Carolina. These 2 agencies, operated under the direction of the Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), are responsible for archiving marine and continental meteorological data sets, respectively. During the past 5 years, SAIC/Raleigh has dealt with these 2 agencies in obtaining both meteorological and oceanographic data in support of the Gulf of Mexico Physical Oceanographic Program (GOMPOP). Through this work, 9 first-order (e.g., hourly surface meteorological observations are made) National Weather Service (NWS) stations surrounding the Gulf of Mexico have been

Table 2.1-1 Synoptic weather types in percent of hours for New Orleans, 1971-74 (from Muller, 1977).

TYPE	J	F	M	A	M	J	J	A	S	O	N	D	TOTAL
Pacific High	6	15	9	9	7	0	0	0	2	11	4	8	6
Continental High	14	25	16	21	30	23	11	22	18	42	29	27	23
Frontal Overrunning	27	16	15	10	8	7	4	4	8	8	23	20	13
Coastal Return	8	12	11	12	6	4	7	20	16	18	10	7	11
Gulf Return	24	16	26	30	27	25	28	16	20	13	18	11	21
Frontal Gulf Return	17	16	23	18	17	11	4	4	7	7	16	27	14
Gulf Tropical Disturbance	0	0	0	0	1	2	4	6	25	0	0	0	3
Gulf High	4	0	0	0	4	28	42	28	4	1	0	0	9

identified. Each of these stations provides a complete time series of wind speed, wind direction, air temperature and atmospheric pressure. Table 2.2-1 is a listing of these stations, including their locations and NWS identification numbers. For each of these stations, a 17-year record of the "TD-1440 Airways Surface Observations" was obtained, except for Boothville, Louisiana, which was unavailable prior to May 1971. Figure 2.2-1 is a time line, detailing the period of observations included in this climatology.

Marine meteorological data, consisting primarily of fixed-position, moored deep-ocean buoys, were obtained from NODC in raw NODC file format type F191. The operation and maintenance of this buoy network is under the direction of the National Data Buoy Center (NDBC), formerly the National Data Buoy Office (NDBO). The NDBC has supported programs operating these buoys since the early 1970's. Currently, the NDBC maintains approximately 49 buoys in the marine environment, 20 of which are considered in deep ocean areas greater than 150 km offshore (National Data Buoy Center, 1987; Hamilton, 1986). In this study, 8 moored buoys were identified and selected for inclusion in the analysis. Of these, 3 were considered deep-ocean buoys, while the remaining five 5 were in shallower shelf regions. Stations 42010 and 42011 were platform locations as opposed to moored buoys. Table 2.2-2 details the locations of each individual buoy, while Figure 2.2-2 is a time line depicting the period of observation selected for each location. The accuracy/reliability of these data prior to 1976 is questionable, and thus this climatology begins with data collected in January 1976.

In 1981, due to the vital importance of marine meteorological observations for the detection, intensity and movement of storms, and their importance in providing high resolution observations of the pressure and wind fields (for use with numerical weather prediction schemes), the NDBC (in conjunction with NWS) launched the Coastal Marine Automated Network (CMAN) program. Currently, the network consists of approximately 48 stations around the contiguous United States, Alaska and the Bahamas. The network consists of standard meteorological instrument systems at 9 United States Coast Guard (USCG) offshore platforms, 17 USCG lighthouses, 10 beach areas, 3 public fishing piers and 9 NDBC buoys. Of these, Table 2.2-3 details the location and period of operation for 8 stations which are currently operable within the Gulf of Mexico region (NDBC, 1987; Hamilton, 1986). Five of these stations (BURL1, CSBF1, GDIL1, PTAT2 and SRST2) contain relatively complete data records beginning in January, 1985. ALRF1 becomes reliable during 1986, while the station at Venice, Florida (VENF1) has a good time series beginning in January, 1987. The CMAN station located on Dauphin Island, Alabama (DPIA1) was listed as being operational during 1987; however, this data set was not included with the FAMU submission, which was obtained directly from NODC. Figures 2.2-3a-c are computer-generated time lines depicting the periods of observation utilized during this study for each of 4 environmental variables: (a) wind speed/wind direction, (b) air temperature/atmospheric pressure and (c) sea surface temperature (SST). It should be noted that SST was only recorded at 3 stations, ALRF1, GDIL1 and VENF1.

In an effort to increase the quantity of open ocean observations, data from the Ocean Currents Measurement Program (OCMP) were targeted for analysis. However, due to the large expense of digitizing these data (from analog tapes to digital tapes) only one of 3 available data sets was chosen for analysis. The central most station, located in Shell's Eugene Island Block 331-A (28.2°N, 91.6°W), was selected as the best data set for analysis. The primary aim of the OCMP program had been to obtain a complete data set on hurricane-generated currents. The

Table 2.2-1 List of National Weather service stations surrounding the Gulf of Mexico, where TD-1440 Airways Surface Observation data were available for the period 1/01/70 - 12/31/86 (except for Boothville, Louisiana; 5/01/71 - 12/31/86).

Station ID	Name	Latitude	Longitude
12835	Fort Myers, Florida	26.8°N	82.2°W
12836	Key West, Florida	24.5°N	81.7°W
12842	Tampa, Florida	27.9°N	82.5°W
12917	Port Arthur, Texas	29.9°N	93.9°W
12919	Brownsville, Texas	25.9°N	97.5°W
12924	Corpus Christi, Texas	27.8°N	97.4°W
13894	Mobile, Alabama	30.7°N	82.2°W
13899	Pensacola, Florida	30.5°N	87.2°W
12884	Boothville, Louisiana	29.4°N	89.4°W

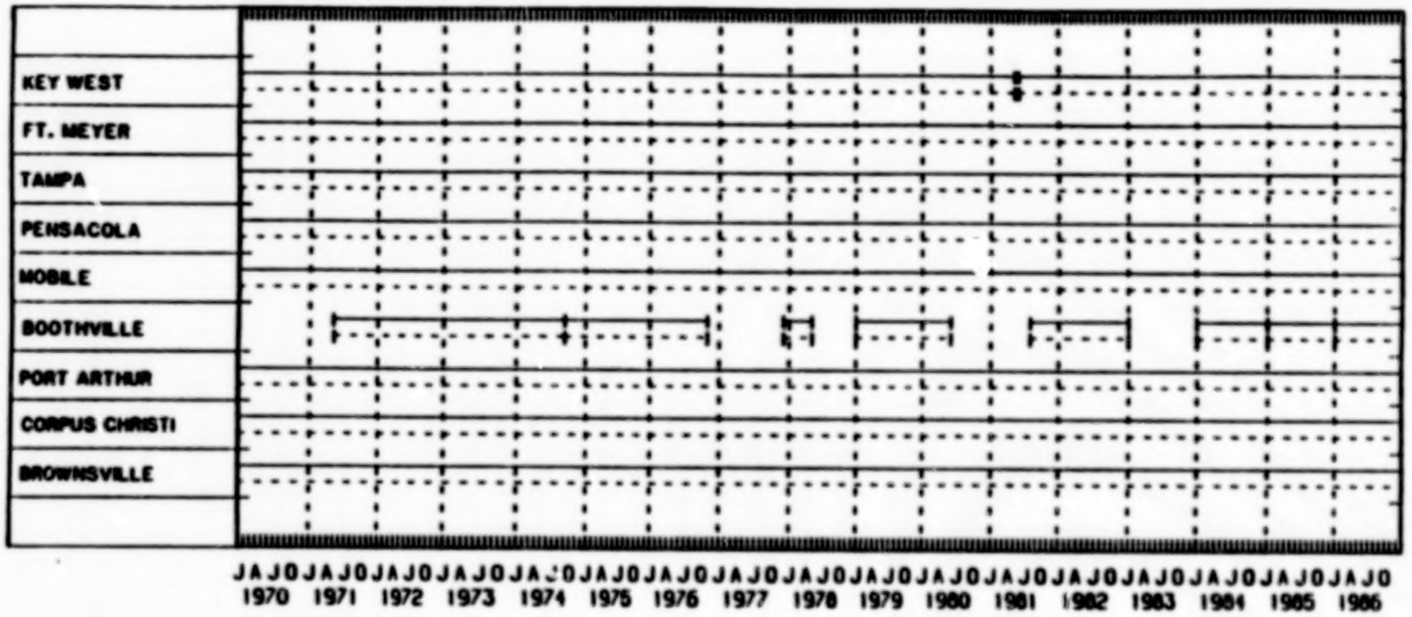

Figure 2.2-1 Computer-generated time line from SAIC/Raleigh's Data Base Management System (DBMS) showing the National Weather Service (NWS) sites utilized during this study and the period of observations analyzed. Solid lines denote wind data, while dashed lines refer to air temperature and atmospheric pressure data.

Table 2.2-2 Summary listing of NDBC buoy locations in the Gulf of Mexico selected for analysis in the climatological summary.

Buoy	Latitude	Latitude	Period of Operation
42001	26.0°N	90.0°W	8/75 - 8/79
	25.9°N	89.7°W	8/79- Present
42002	26.0°N	93.5°W	9/76 - Present
42003	26.0°N	86.0°W	11/76 - 7/80
	26.0°N	85.9°W	7/80 - Present
42007	30.1°N	88.9°W	1/81 - 12/86
	30.1°N	89.8°W	6/87 - Present
42008	28.7°N	95.3°W	8/80 - 7/84
42009	29.3°N	87.5°W	9/80 - 1/87
42010	29.7°N	93.4°W	4/81 - 3/82
42011	29.6°N	93.5°W	1/82 - 9/84

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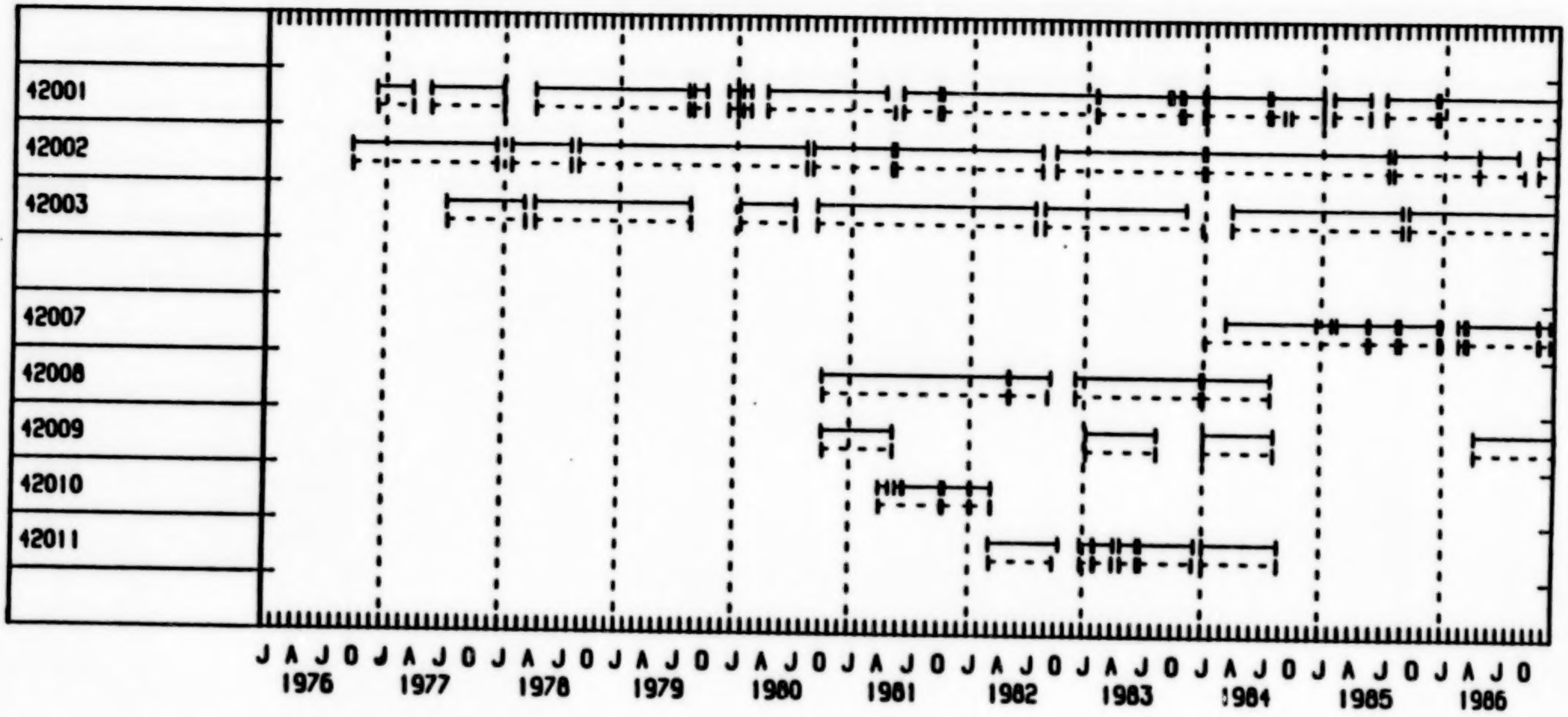

Figure 2.2-2 Computer-generated time line from SAIC/Raleigh's DBMS showing the National Data Buoy Center (NDBC) buoy numbers and the period of observations utilized during this study. Solid lines denote wind data, while dashed lines refer to air temperature and atmospheric pressure data.

Table 2.2-3 Summary listing of NDBC C-MAN observation stations surrounding the Gulf of Mexico.

Station ID	Name	Latitude	Longitude	Period of Operation
ALRF1	Alligator Reef, Florida	24.9°N	80.8°W	1/85-5/86 5/86 7/86-Present
BURL1	Southwest Pass, Louisiana	28.9°N	89.4°W	2/84-5/84 5/84-7/84 7/84-6/85 7/85 8/85-Present
CSBF1	Cape San Blas, Florida	29.7°N	85.4°W	3/83-Present
DPIA1	Dauphin Island, Alabama	30.3°N	88.1°W	1/87-Present
GDIL1	Grand Isle, Louisiana	29.3°N	90.0°W	1/85-11/85 11/85-Present
PTAT2	Port Aransas, Texas	27.8°N	97.1°W	3/84-Present
SRST2	Sabine, Texas	29.7°N	94.1°W	2/84-7/85 8/85-12/86 1/87-Present
VENF1	Venice, Florida	27.1°N	82.5°W	5/86-9/86 10/86-Present

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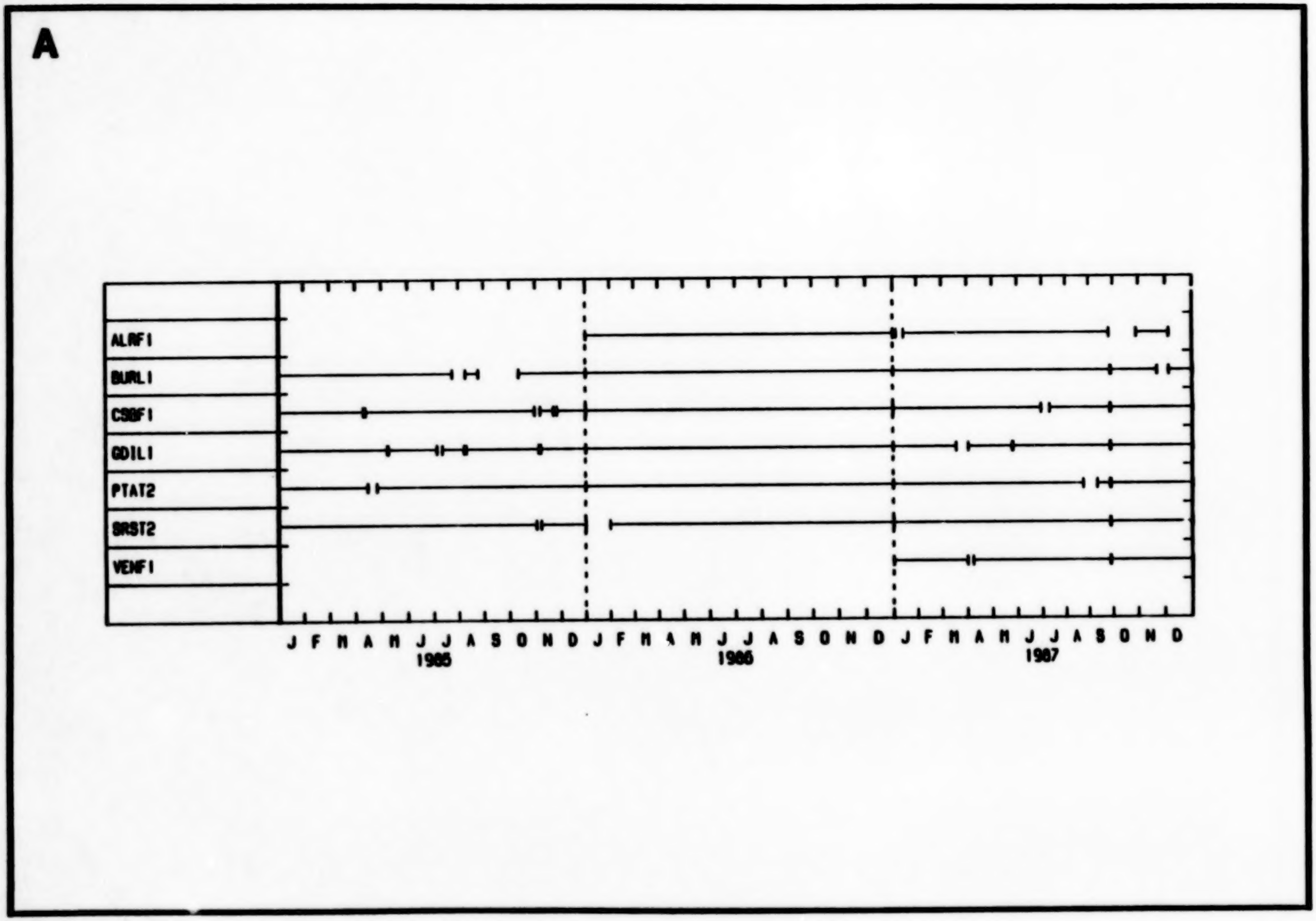

Figure 2.2-3a Computer-generated time line from SAIC/Raleigh's DBMS showing the National Data Buoy Center (NDBC) CMAN stations and the period of observations utilized during this study. Solid lines denote wind data.

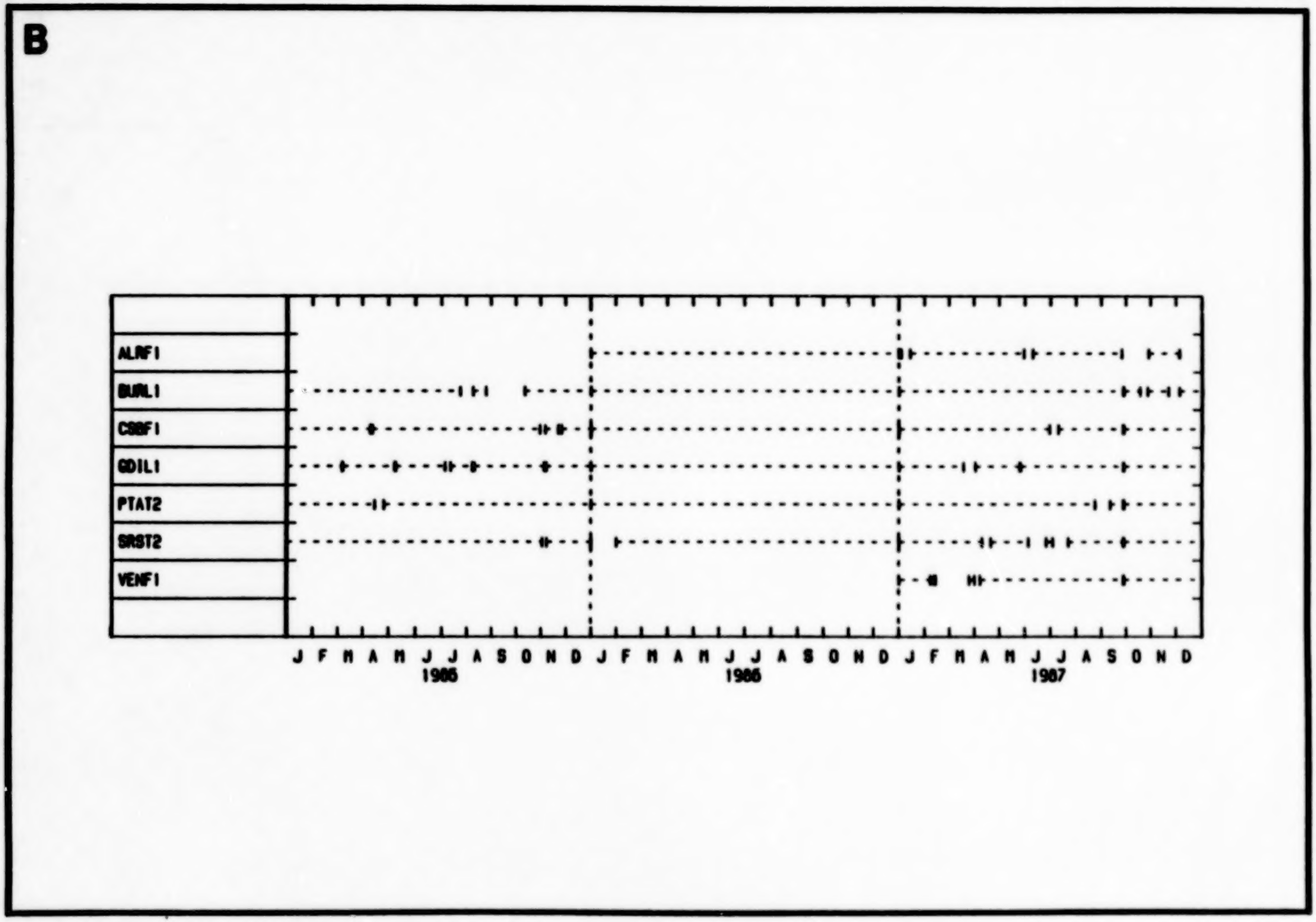

Figure 2.2-3b Computer-generated time line from SAIC/Raleigh's DBMS showing the National Data Buoy Center (NDBC) CMAN stations and the period of observations utilized during this study. Dashed lines denote air temperature and atmospheric pressure data.

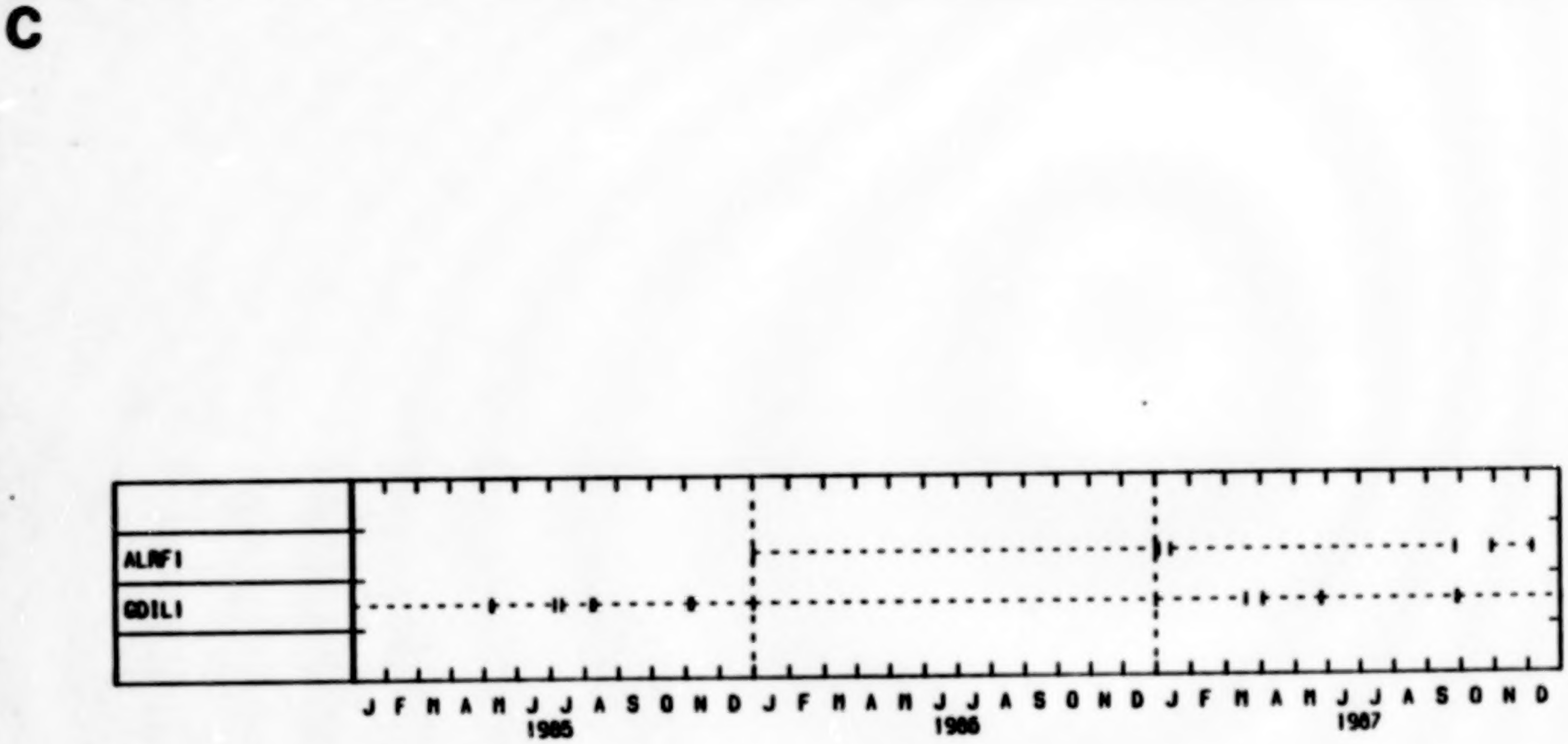

Figure 2.2-3c Computer-generated time line from SAIC/Raleigh's DBMS showing the National Data Buoy Center (NDBC) CMAN stations and the period of observations utilized during this study. Dashed lines denote sea surface temperature (SST) data.

instrument package, consisting of 4 EMCM-3BX current meters, a Baylor 9737 wave gauge, a Baylor 11612 electro-barometer and a Baylor 14457 wind system, was a direct extension of the Ocean Data Gathering Program (ODGP), described in detail by Hamilton and Ward (1974). The period of observation discussed in this study spans from September 1972 through November 1976 (Hall, 1972). In addition, only the wind data are presented in this analysis. A schematic time line of these data is presented in Figure 2.2-4.

Figure 2.2-5 summarizes the locations of meteorological stations utilized in this study. The most striking observation is the lack of data in the southwestern Gulf of Mexico and along the eastern coast of the Yucatan Peninsula. However, for the United States Gulf Coast, the data coverage is relatively complete and provides a good summary of wind, temperature and pressure norms and extrema over the period of analysis. The norms are associated with the general circulation of the region, providing the background upon which the extrema lie. These extrema generally occur during strong synoptic disturbances such as extratropical or tropical cyclones and fronts which traverse the Gulf region.

Extratropical cyclone data analyzed in this study were obtained from the University of Virginia, Department of Environmental Sciences. These data span the 100-year period between 1885 and 1986 for each of 101 2½° latitude by 5° longitude grid cells. Each cell represents a "frequency-count" of the number of storms passing through a particular box during each month of the record. The cyclone tracks were obtained from 2 primary sources: "Tracks of the Centers of Cyclones at Sea Level," published by the Monthly Weather Review, and most recently by the Mariners Weather Log. Multiple entries of a single storm in a grid cell were ignored (Hayden, 1981). For this particular study, a 100-year, 12-cell subset was extracted from the original 101-cell data matrix. The location of each grid cell is shown in Figure 2.2-6.

In an attempt to characterize the effects of hurricanes on meteorological conditions surrounding the Gulf, the North Atlantic Basin, Tropical Cyclone Data Tape was obtained from NCDC. This data set, commonly known as "HURDAT", contains 6 hourly positions of tropical cyclones spanning the years 1886 through 1986. The tracks contained in HURDAT correspond to those given by Neumann et al. (1981), which is basically an updated version of Cry's (1965) original storm track atlas containing cyclone tracks between 1886 and 1963. This data set contains position (latitude and longitude), maximum sustained wind speed (knots), central pressure (millibars) and time and date of observations for each tropical cyclone. Obviously, the availability and accuracy of these data have been inconsistent through the years. In fact, it is likely that in earlier years, when open ocean detection was based on ship reports, some storms went undetected. Thus, the most useful information from early years can be gleaned from cyclone track data as opposed to wind speed or central pressure observations (Jarvinen et al., 1984). In addition, our tropical cyclone analysis was supplemented by the results of a previous study on North Atlantic Basin storms by Neumann and Pryslak (1981).

The final piece of information studied during the analysis was a compilation of all available commercial and military ship data for the Gulf of Mexico for the period 1854 through 1973. This enabled the generation of monthly composite sea surface temperature (SST) maps for the Gulf. The data were compiled in tabular form by Baltz (1978), in 1° latitude by 1° longitude quadrangles using computer-

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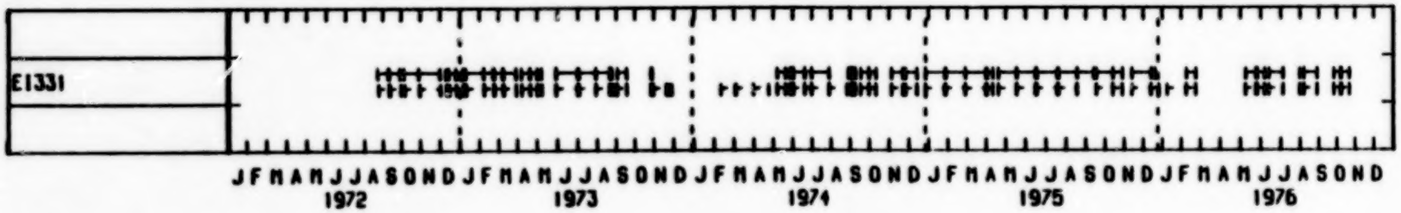

Figure 2.2-4 Computer-generated time line from SAIC/Raleigh's DBMS showing the period of observations utilized from the Eugene Island Block 331-A platform. Solid lines denote wind data, while dashed lines refer to atmospheric pressure and wave height data.

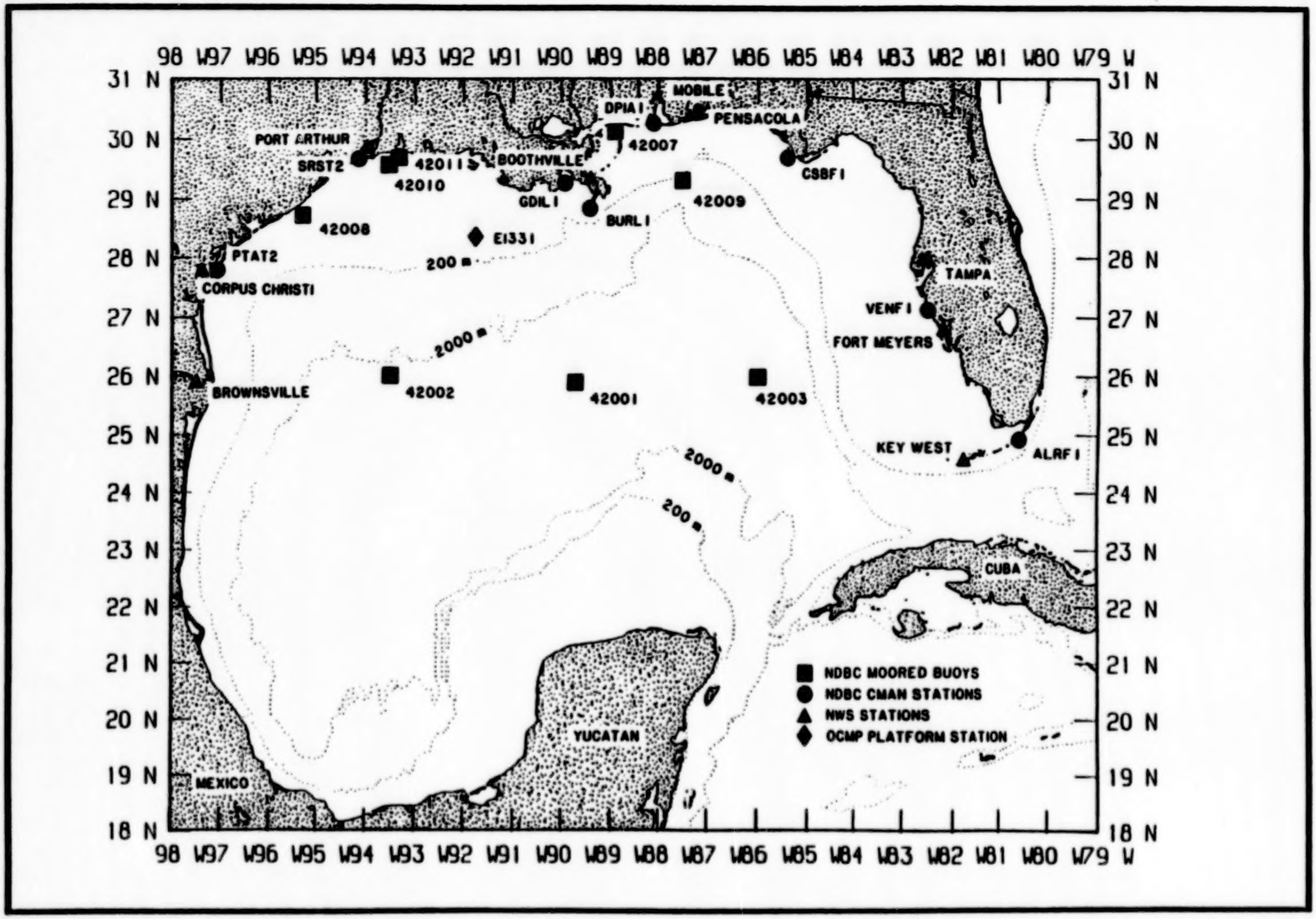

Figure 2.2-5 Summary map showing the locations of all data sets analyzed during this study.

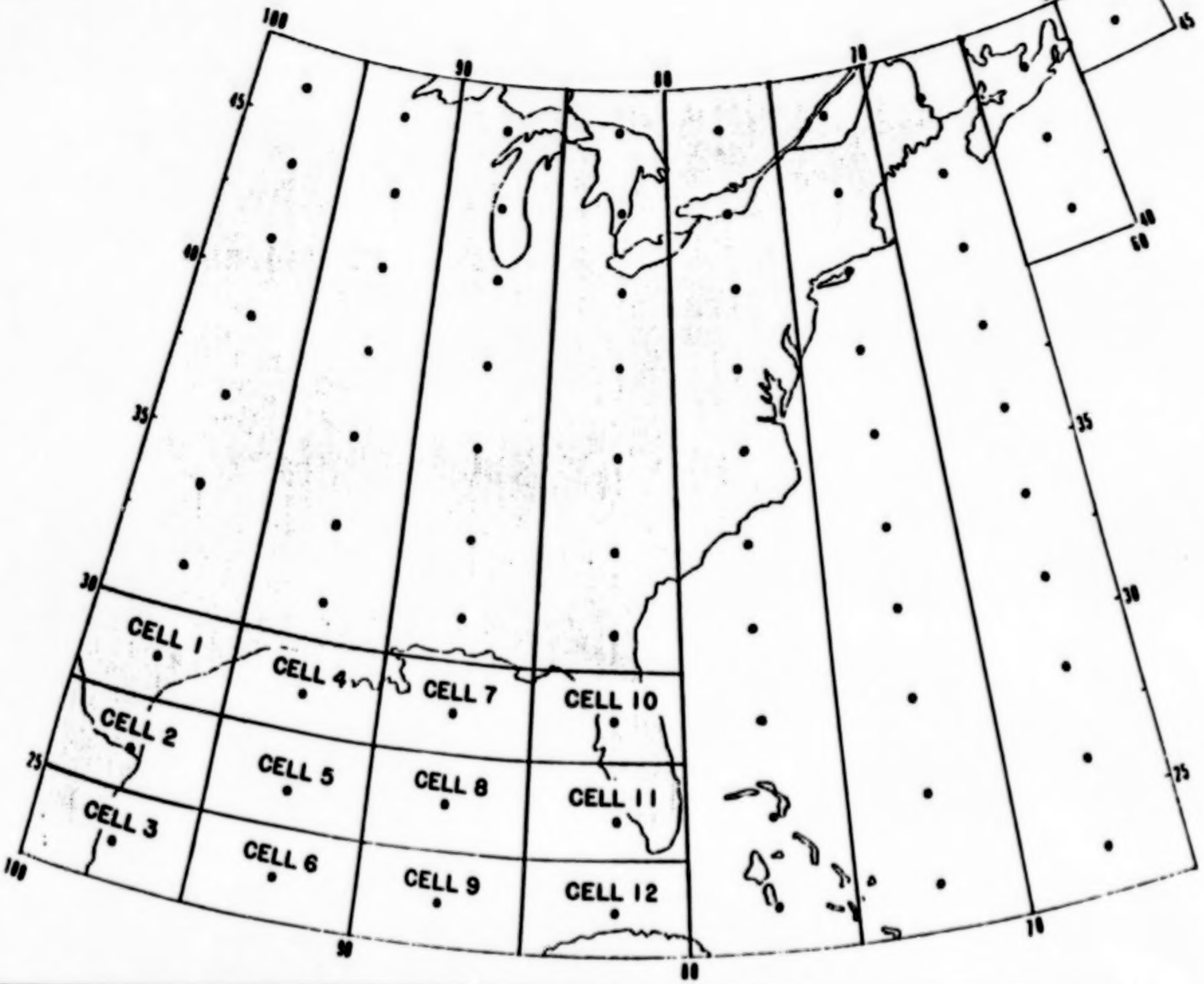

Figure 2.2-6 Base map showing the location of the 12 $2^1/_2$° latitude by 5° longitude grid cells used in this study (map adapted from Hayden, 1981).

produced worksheets used to prepare the U.S. Navy Marine Climatic Atlas of the World, Volume I, North Atlantic Ocean. (U.S. Dept. of Defense, U.S. Dept. of the Navy, 1974). These data were obtained directly from NCDC by Baltz (1978) and organized in monthly maps detailing mean SST and number of observations per quadrangle. Grid cells containing less than 10 observations over the analysis period were neglected in Baltz's (1978) analysis, but were linearly interpolated using the closest 2 quadrangles in the present analysis. Quadrangles requiring interpolation were few and generally near the northeast Gulf coastline, where temperature variation between quadrangles rarely exceeded 0.5°C.

2.3 Data Processing/Analysis

A wide variety of the data sets collected by various government agencies detailed in Section 2.2 require uniformity of processing so that standard analyses can be applied to produce directly comparable statistics for different locations and years. The majority of data used in this report is in the form of time series of vector or scalar values (i.e., wind, temperature, pressure, etc.) at a fixed location or station. Initial processing of these time series removes spurious values by procedures outlined below and uses various interpolation schemes to produce equally-spaced time series suitable for standard time series analysis techniques (i.e., spectral analyses). Unit conversions are made as appropriate (i.e., miles per hour to ms^{-1}).

Most of the data taken by unattended sensors on the ocean suffer failures from time to time, which may produce long gaps in the time series until the sensor is replaced or serviced. Therefore, long continuous time series are not available from NDBC buoys. Occasional long gaps occur in land-based data also. Such data is broken into segments, each of which is a continuous equally-spaced time series. These segments are then run together with the long gaps, between the end of 1 segment and the beginning of the next and filled with the appropriate number of unique flag values. The analysis programs recognize these flag values and take action so that gap values do not contaminate the statistical calculations. Thus, multi-year statistics can be calculated from a time series constructed of many segments of good data separated by gaps.

Statistical techniques used are quite standard and include calculation of means and variances on a monthly, seasonal, annual and multi-year basis. These statistics are summarized in Appendix C. Wind roses (using meteorological convention for wind direction) are constructed for wind vector time series. Wind roses display the percentage of time wind blows from a given range of directions (usually ± 15°) with a given range of speeds (e.g. 2-4 ms^{-1}). Calms, defined as speeds equal to zero, are counted as a separate class. Similar information is displayed in tabular form as speed and direction frequency distributions (or histograms) in Appendix D. The calculations of derived quantities such as surface heat flux from air temperature, sea surface temperature and wind speed are discussed in the appropriate section below. The following sections discuss the treatment and quality assurance of data from NWS coastal stations, NDBC buoys, NDBC CMAN stations, storm tracks and OCMP platform data.

2.3.1 NWS Coastal Data

The data obtained from NWS coastal stations include wind speed and direction, air temperature and atmospheric pressure. The data are read from NCDC archive tapes, converted to internal binary values in standard units (ms^{-1}, degrees celsius and millibars, respectively) and missing values flagged. Wind speed and direction are converted in positive east (u) and north (v) vector components and 1000 mb is subtracted from the pressure values. The resulting binary files are checked for values out of range and missing records. Gaps caused by both values out of range and data values not being taken, which are less than 8 hours, are filled by linear interpolation. Longer gaps, 8 to 24 hours, are filled by an interpolation procedure which takes account of the periodicities in the record and preserves the spectral content. Gaps longer than 1 day are not filled, and the record is segmented at these points. In some records (primarily Boothville) data was regularly not taken at night for periods of many months. The gap-filling procedures outlined above assume that they occur essentially randomly through the time series. Therefore, periods with daily occurring 6- to 8-hour gaps were discarded from the records. Coastal station, NDBC buoy and NDBC CMAN data, discussed in the following sections, are usually taken at 3- or 1-hour intervals, and the same station can have data taken at both time intervals. Three-hour data was common prior to about 1981 for both NWS and NDBC buoy stations, while 1-hour data is common after this date. Therefore, to generate consistent time series from a single station and for comparison between stations, the 3 hourly data sets were linearly interpolated to 1-hour time intervals. The clean up and interpolation of the data records is done interactively by displaying the data graphically, and is under the control of the analyst at all times. Thus, extreme events or unusual but valid data are not discarded as is sometimes the case with automatic range checking using climatologically derived extremes.

The resulting segments of equally spaced and continuous records of data are shown in the time lines given in Section 2.2. Short segments of less than 2 to 3 weeks have been discarded, and where data from separate years were processed separately, the segments have been run together where feasible. The time base information (start and stop dates, time interval, number of data values) for each segment and data type are entered into the SAIC/Raleigh Data Base Management System (DBMS) which provides this information to the analysis routines and allows rapid and easy identification and retrieval of data files associated with a particular station and data type. The time lines in Section 2.2 were generated automatically by computer search of the data base information.

2.3.2 NDBC Buoy Data

NDBC buoys generate wind speed and direction, air temperature, sea surface temperature (SST), atmospheric pressure and significant wave height and period if a wave rider is installed. Since heat flux is proportional to the difference between air and sea surface temperature and wind speed, statistics are calculated for this difference (Air-SST) rather than air temperature alone. Not all buoys have a complete suite of instruments and sensors were added at various times through their history. The records have considerably more short and long gaps than the coastal and CMAN station data. However, the clean up, gap filling and interpolation to 1-hour time intervals is essentially the same as outlined above.

The shelf NDBC platforms off Cameron, Louisiana (42010 and 42011) were quite close to each other. There is little overlap between the end of the 42010 data record and the beginning of the 42011 record. Therefore, in the calculation of multi-year monthly means and variances and seasonal statistics, the 2 data sets from 42010 and 42011 were merged and considered as being from 1 site.

2.3.3 NDBC CMAN Data

NDBC CMAN sites collect wind speed and direction, air temperature and atmospheric pressure at all 8 stations in the Gulf of Mexico. At 3 of these locations (ALRF1, GDIL1 and VENF1), a thermistor is also available to archive the sea surface temperature. Differencing the air temperature and SST allows the computation of a sensible heat flux time series at these 3 locations. The length of the CMAN records are considerably shorter than those of the NDBC buoy and NWS coastal station data sets. Thus, use caution when considering these data, since they do not represent long-term, stable mean values. These time series are of such short duration (maximum of 3 years) that their seasonal and annual means may not be directly comparable to the longer NWS and NDBC buoy time series. However, they supply very important information towards our understanding of the meteorological processes affecting oceanographic operations in the Gulf of Mexico, and thus were included in this report for completeness. The data processing/quality control procedures are identical to those mentioned in the above sections (2.3-1 and 2.3-2) when discussing the buoy and coastal station data.

2.3.4 Storm Track Data

The storm track data set can be subdivided into 2 separate components: the extratropical cyclone data, organized by grid cells and the hurricane track data organized by 6 hourly positions. Thus, the data processing procedures for the 2 data sets varied remarkably and will be discussed as 2 separate entities. First, a discussion of the procedure followed in processing the University of Virginia's extratropical cyclone data.

Initially, the 101-grid cell matrix was decomposed into individual cells and then a 12-grid cell matrix encompassing the study area was reconstructed. The geographical area covered by this 12-grid cell matrix is shown in Figure 2.2-6. The lower left-hand corner of the box is at 22.5°N, 100.0°W, while the upper right-hand corner of the matrix rests just east of the Florida coast at 30.0°N, 80.0°W. This area corresponds to grid cells 11-13, 24-26, 37-40 and 50-52 in Hayden's (1980) original classification scheme. For the purpose of this study, these cells have been renumbered as 1-3, 4-6, 7-9 and 10-12, respectively, and are now referred to as the 12 independent variables. The Gulf of Mexico extratropical cyclone data base now consists of a matrix containing 12 variables (each individual grid cell) by 1,200 cases (totals for each month for each year between 1886-1985).

The new 12 by 1,200 matrix contains a frequency count for each month for each grid cell. In order to perform an analysis of seasonal trends in the cyclone, the data set must be further subdivided into winter, summer and transitional data sets. From analysis of the coastal, CMAN and buoy winds, it was determined that December-March constituted a good winter season, while May-October accurately represented the summer season. April and November were considered transitional periods and were analyzed only in terms of their mean and standard deviation. No complex analyses were performed on these latter 2 periods. In creating the summer, winter and transitional matrices the monthly values for each grid cell within a given season were summed to give a single frequency value per season per year. Thus, the data set was further reduced to its final working size of 12 variables by 100 cases.

In order to partition the variance in this data set, principal components analysis (PCA) was chosen, since it has been shown that PCA can successfully resolve the variance structure in multivariate, geophysical data (Kutzbach, 1967; Fritts et al., 1971; Resio and Hayden, 1975; Hayden, 1980; and Wayland, 1983). PCA is often referred to as empirical orthogonal function (EOF) analysis in the literature. Using a minimization of least square errors, this procedure is useful in determining patterns in large data sets (Lorenz, 1956; Gilman, 1957; and Kutzbach, 1967). The purpose of the analysis is to transform a series of intercorrelated variables (currently defined as the frequency counts in each of 12 cells) into a set of new statistically independent variables. These new variables are linear combinations of the original variables. However, they are mutually orthogonal. In order to prevent grid cells having a high-mean frequency count from dominating the total variance and eigenvector forms, a correlation matrix was employed as opposed to a covariance matrix. Upon completion, the PCA provides a description of the uncorrelated major modes of variation in the Gulf of Mexico cyclone data set. From this type of analysis can be drawn the estimate of total system variance explained by each eigenvector and the importance of each component within each case. Generally, each principal component eigenvector can be related to some property of the original data set (Hayden, 1980).

Analysis of the tropical storm data began with the definition of a data window which covered the region of interest--the Gulf of Mexico. The dimensions of the box being 10 degrees of latitude by 20 degrees of longitude, ranging from 20°N, 100°W in the lower left-hand corner to 30°N, 80°W at the upper right boundary (Figure 2.3.4-1). Using this window the HURDAT data set was analyzed, partitioning the storm statistics on the basis of location either inside or outside the box. The computed statistics, tabulated on an annual basis for each year between 1886 and 1986, were as follows: total number of storms occurring (i.e., hurricanes, tropical storms and subtropical storms); total number of storm days; number of hurricanes; number of tropical storms; number of subtropical storms; number of storms crossing the U.S. coastline (e.g., making landfall); number of storms entering the Gulf of Mexico window and the number of storm days observed within the window. The calculation of the number of storm days allows for the counter to increment for each day that a tropical or subtropical event is active. However, if more than 1 system is present on any given day, the counter is still only incremented once. The results showed the relative distribution of storms within the Gulf of Mexico as opposed to the total storm climate for each of the 101 years on record. From these results, it is quite easy to assess the importance of storm tracks to the climatology of the Gulf of Mexico for any given year.

Finally, North Atlantic basin-wide statistics are presented based on an analysis scheme developed by Neumann and Pryslak (1981). Their data set consisted of 663 tropical systems spanning the 80-year period between 1899 and 1978. Their analysis routines are based on a 54 row by 91 column data matrix containing 4,914 data points. The resulting grid spacing was 111.2 km, and a 139 km circle, centered on each of the 4,914 points, was used for the digital frequency counts. In addition, the 6-hourly storm positions were interpolated to hourly positions, using the bivariate scheme of Akima (1970). A 139-km circle was chosen in the analysis for two reasons. First, 139 km is the average area generally associated with tropical cyclone damage and secondly, the area within the circle closely resembles the 2½° latitude by 2½° longitude boxes used in a similar study by Hope and Neumann (1969).

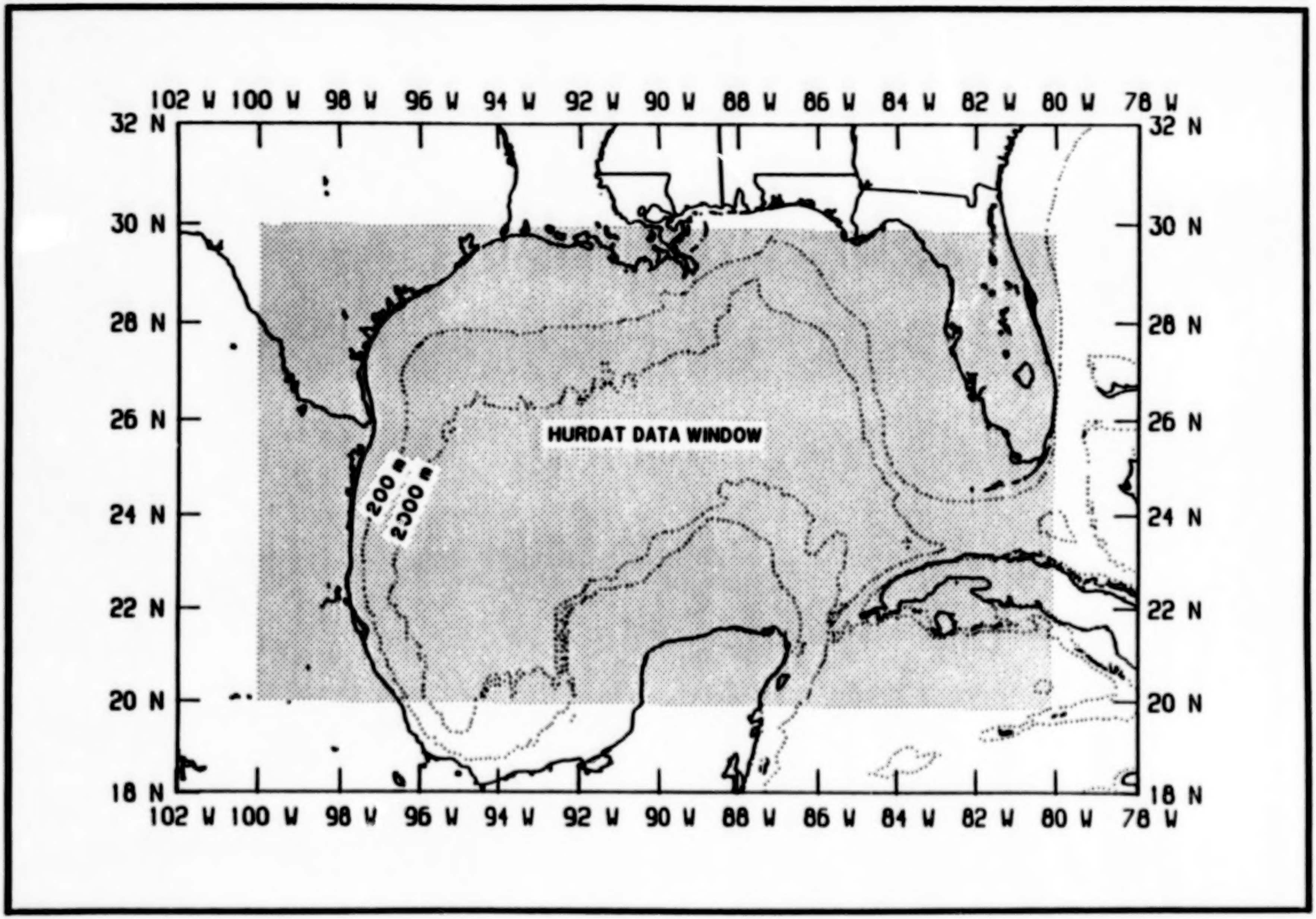

Figure 2.3.4-1 Base map detailing the data window utilized during the analysis of the tropical cyclone data set (HURDAT).

The base map detailing the identification number of each 2½° latitude/longitude grid cell is given in Figure 2.3.4-2. From this analysis, Neumann and Pryslak (1981) presented 3 charts and 1 table depicting (1) average storm frequency per unit area per 100-year interval, (2) mean resultant speed and direction, (3) storm tracks for all storms upon which (1) and (2) are based, and (4) a table summarizing the means and standard deviations of the storm translation data. The preceding calculations were subdivided into 3 separate storm classifications: maximum sustained winds > 34 knots, > 64 knots and > 100 knots. These storm intensities relate to the storm classifications of tropical storm, hurricane and great hurricane, respectively. Neumann and Pryslak (1981) provided calculations on an overlapping monthly basis for each month during the hurricane season (June 1-November 30) and included the preceding month of May. In this analysis, only season summary maps are presented, detailing tropical cyclone climatologies for each of the 3 storm types for the period of May 1 through November 30.

2.3.5 Ocean Current Measurement Program (OCMP) Data

The data from each of the 4 instruments (barometer, wave gauge, current meter and wind system) were collected in analog form and stored on 7,200 foot tapes, using FM recorders run at a speed of 0.03 inches per second. Using this procedure, a maximum time of 33 days of continual operation was allowed during the program. The general instrument service cycle was 1 month, with complete calibrations performed on all data channels each visit (Hall, 1972). A total number of 56 analog tapes were generated during the OCMP project and were made available to this program for analysis by Shell Oil Company.

The conversion (digitization) of the analog data tapes to more useful digital tapes was performed by Mr. Robert Hamilton of Evans-Hamilton, Incorporated (EHI), Houston, Texas. Mr. Hamilton has had previous data conversion experience both with this data set and with the original Ocean Data Gathering Program (ODGP). Due to the length of time elapsed since data collection and this analysis, several of the analog tapes had begun to deteriorate and were not suitable for processing. Thus, a total of 47 digital tapes were digitized and sent to SAIC/Raleigh for analysis and inclusion in this meteorological summary. The digitization procedure consisted of using high and low calibration count values to convert the analog data to digital form. Slope and intercept values were also generated for each hour and these values were, in turn, used in the final data transcription procedure. Figure 2.3.5-1 is an example of a printout provided by EHI for each tape processed during this study. The stability of these values (e.g., the count, calibration, slope and intercept) was a good indicator of the quality of the data for each hour written to digital tape.

The final output digital data set consisted of the 4 data channels (wind speed, wind direction, atmospheric pressure and wave height) being demultiplexed into 4 blocks. The resulting data record size being 1,920 bytes and the block size being 7,680 bytes. The digitization process resulted in the first 1,024 seconds (17.067 minutes) of each hour being sampled at a 0.5 second interval, yielding 2,048 samples per data channel. Therefore, each logical tape record contained 128 samples of data and each physical tape record contained 512 samples. The units were unchanged with waves in feet, wind speed in miles per hour, wind direction in degrees True (from which the wind blew, e.g., meteorological

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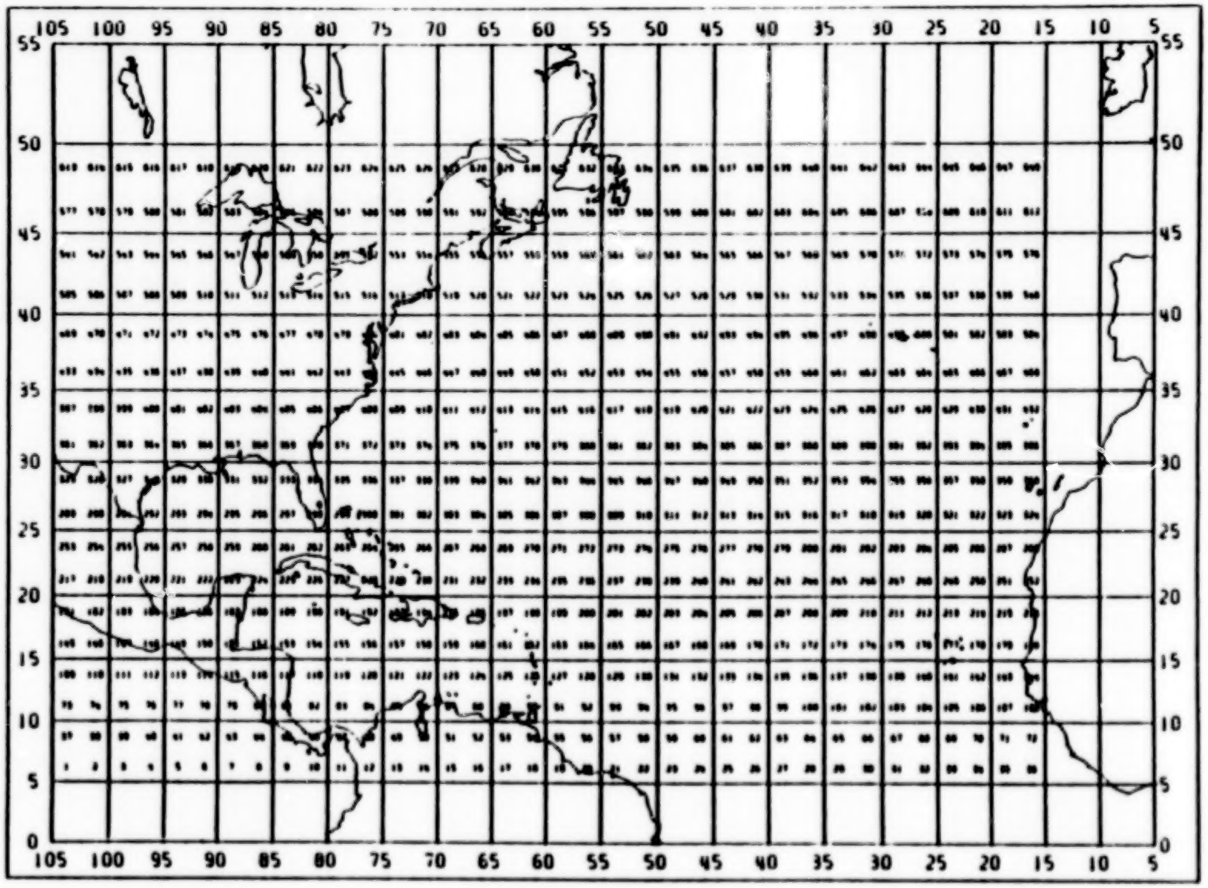
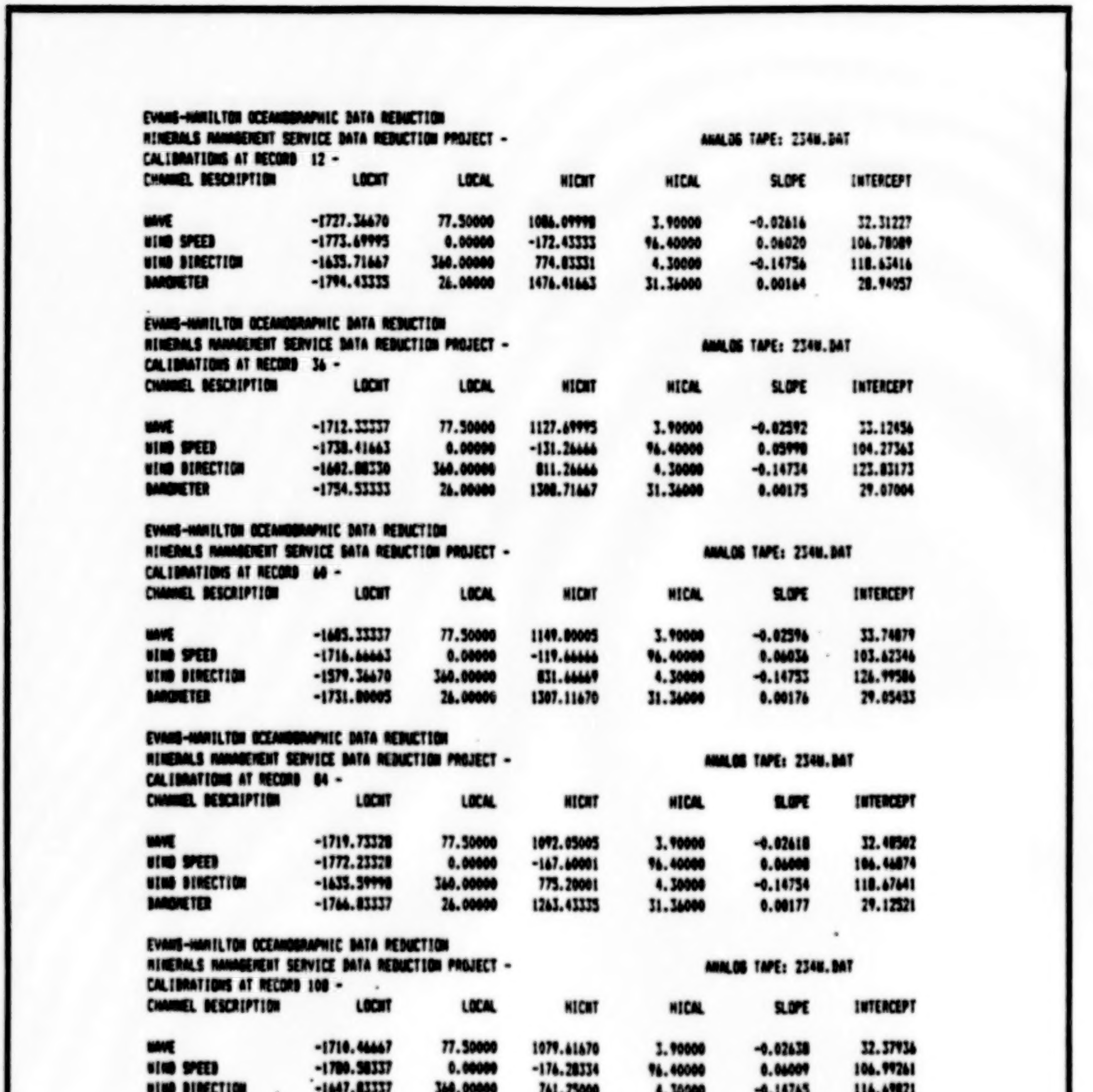


Figure 2.3.4-2 Base map detailing the location of each 2½° latitude/longitude grid cell used in the North Atlantic Basin tropical cyclone analyses (from Neumann and Pryslak, 1981).



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EVANS-HAMILTON OCEANOGRAPHIC DATA REDUCTION
MINERALS MANAGEMENT SERVICE DATA REDUCTION PROJECT -                    ANALOG TAPE: 234W.DAT
CALIBRATIONS AT RECORD  12 -
CHANNEL DESCRIPTION          LOCNT        LOCAL         HICNT         HICAL        SLOPE      INTERCEPT

WAVE                   -1727.36670     77.50000    1086.09998       3.90000     -0.02616       32.31227
WIND SPEED             -1773.69995      0.00000    -172.43333      96.40000      0.06020      106.78089
WIND DIRECTION         -1635.71667    360.00000     774.83331       4.30000     -0.14756      118.63416
BAROMETER              -1794.43335     26.00000    1476.41663      31.36000      0.00164       28.94057

EVANS-HAMILTON OCEANOGRAPHIC DATA REDUCTION
MINERALS MANAGEMENT SERVICE DATA REDUCTION PROJECT -                    ANALOG TAPE: 234W.DAT
CALIBRATIONS AT RECORD  36 -
CHANNEL DESCRIPTION          LOCNT        LOCAL         HICNT         HICAL        SLOPE      INTERCEPT

WAVE                   -1712.33337     77.50000    1127.69995       3.90000     -0.02592       33.12456
WIND SPEED             -1738.41663      0.00000    -131.26666      96.40000      0.05998      104.27363
WIND DIRECTION         -1602.08330    360.00000     811.26666       4.30000     -0.14734      123.83173
BAROMETER              -1754.53333     26.00000    1308.71667      31.36000      0.00175       29.07004

EVANS-HAMILTON OCEANOGRAPHIC DATA REDUCTION
MINERALS MANAGEMENT SERVICE DATA REDUCTION PROJECT -                    ANALOG TAPE: 234W.DAT
CALIBRATIONS AT RECORD  60 -
CHANNEL DESCRIPTION          LOCNT        LOCAL         HICNT         HICAL        SLOPE      INTERCEPT

WAVE                   -1685.33337     77.50000    1149.00005       3.90000     -0.02596       33.74879
WIND SPEED             -1716.66663      0.00000    -119.66666      96.40000      0.06036      103.62346
WIND DIRECTION         -1579.36670    360.00000     831.66669       4.30000     -0.14753      126.99586
BAROMETER              -1731.00005     26.00006    1307.11670      31.36000      0.00176       29.05433

EVANS-HAMILTON OCEANOGRAPHIC DATA REDUCTION
MINERALS MANAGEMENT SERVICE DATA REDUCTION PROJECT -                    ANALOG TAPE: 234W.DAT
CALIBRATIONS AT RECORD  84 -
CHANNEL DESCRIPTION          LOCNT        LOCAL         HICNT         HICAL        SLOPE      INTERCEPT

WAVE                   -1719.73328     77.50000    1092.05005       3.90000     -0.02618       32.40502
WIND SPEED             -1772.23328      0.00000    -167.60001      96.40000      0.06008      106.46874
WIND DIRECTION         -1635.59998    360.00000     775.20001       4.30000     -0.14754      118.67641
BAROMETER              -1766.83337     26.00000    1263.43335      31.36000      0.00177       29.12521

EVANS-HAMILTON OCEANOGRAPHIC DATA REDUCTION
MINERALS MANAGEMENT SERVICE DATA REDUCTION PROJECT -                    ANALOG TAPE: 234W.DAT
CALIBRATIONS AT RECORD 108 -
CHANNEL DESCRIPTION          LOCNT        LOCAL         HICNT         HICAL        SLOPE      INTERCEPT

WAVE                   -1710.46667     77.50000    1079.61670       3.90000     -0.02638       32.37936
WIND SPEED             -1780.58337      0.00000    -176.28334      96.40000      0.06009      106.99261
WIND DIRECTION         -1647.83337    360.00000     761.25000       4.30000     -0.14765      116.69821
BAROMETER              -1776.68335     26.00000    1253.28333      31.36000      0.00177       29.14295

EVANS-HAMILTON OCEANOGRAPHIC DATA REDUCTION
MINERALS MANAGEMENT SERVICE DATA REDUCTION PROJECT -                    ANALOG TAPE: 234W.DAT
CALIBRATIONS AT RECORD 132 -
CHANNEL DESCRIPTION          LOCNT        LOCAL         HICNT         HICAL        SLOPE      INTERCEPT

WAVE                   -1696.71667     77.50000    1074.36670       3.90000     -0.02656       32.43319
WIND SPEED             -1781.08330      0.00000    -183.45000      96.40000      0.06031      107.46369
WIND DIRECTION         -1640.50000    360.00000     758.34998       4.30000     -0.14779      116.37390
BAROMETER              -1778.25000     26.00000    1240.28333      31.36000      0.00177       29.14929
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Figure 2.3.5-1 Sample calibration log sheet from one of the Ocean Current Measurement Program analog to digital tape conversions (from Evans-Hamilton, Incorporated).

conventions), and atmospheric pressure in inches of Mercury. The maximum wave crest elevation was taken at 80 feet, while the minimum trough is zero feet. (Vogel, personal correspondence, 1987).

SAIC/Raleigh processed the digital data tapes from EHI using a Digital Equipment Corporation (DEC) MICRO-VAX II (registered trademark of DEC). The resulting data files were then entered into the DBMS and were processed in a similar manner to the NWS and NDBC wind data sets (See Sections 2.3.1, 2.3.2 and 2.3.3). The exception for the OCMP data was that the wind speeds and directions were converted into positive north and east components and stored in units of ms^{-1}, the wave heights converted into meters (m) and the atmospheric pressure was stored in units of millibars (mb). The individual wind files, ranging in length from 1 day to approximately 31 days, were concatenated together for statistical analysis, using flag values to fill gaps greater than 6 hours. The flag values served as "bad data indicators" and were ignored during all statistical computations.

2.4 Thermal Structure

2.4.1 Air Temperature

Seventeen-year time series of hourly air temperature observations from 9 NWS coastal stations were used to compile monthly mean values and variances. In addition, similar analyses were completed for the 7 CMAN stations, where the time series lengths ranged between 1 and 3 years. Seasonal means of temperature for the winter and summer were computed as the mean of the monthly means for December-March and May-October, respectively. Tables 2.4.1-1 and 2.4.1-2 present these data. Figures 2.4.1-1a-i and 2.4.1-2a-g present the monthly mean temperatures for each of the NWS coastal and NDBC CMAN stations, respectively. Each figure contains error bars indicating the standard deviation from the monthly mean for that particular month and the annual mean temperature for the duration of each record.

The mean annual patterns of temperature are very similar at all stations. However, there are significant variations from year to year. Such variations can be easily recognized using the tables provided in Appendix C (Sections C.1.2 and C.3.1). The highest annual mean temperature is recorded in Key West, Florida (25.3°C), and the lowest annual mean temperature is found at Mobile, Alabama (19.3°C). The greatest temperature difference (9.68°C) in the region is found during winter when comparing the winter seasonal means for Key West and Mobile. Differences between cities at about the same latitude are relatively small during the winter season. For example, Brownsville is 1.28°C cooler than Fort Meyers, primarily due to more frequent frontal activity at Brownsville. The annual variation of monthly air temperatures around the Gulf Coast for all NWS coastal station and NDBC CMAN locations is summarized in Figures 2.4.1-3 and 2.4.1-4, respectively.

The summer temperature variability is less than the winter, but again the greatest difference in summer means of 3.27°C was found between Mobile and Key West. East-West differences in the Gulf of Mexico during this season were generally less than 1°C. This reduction in summertime variability can partially be attributed to the northward retreat of the jet stream during this period, and thus the subsequent reduction in frontal activity.

Table 2.4.1-1 Seasonal means of air temperature (°C) for each of the 9 NWS coastal stations analyzed in this study.

Sta	April	May-Oct. Summer	November	Dec.-Mar. Winter
KW	24.92	27.96	24.26	21.73
FM	22.68	26.40	21.39	18.46
TA	21.83	25.89	19.74	16.61
PE	19.55	25.15	15.90	12.55
MO	19.34	24.69	15.45	12.05
BO	20.15	25.73	17.95	14.08
PA	20.21	25.21	15.88	12.83
CC	22.22	25.56	18.28	15.18
BV	23.47	26.98	19.80	17.18

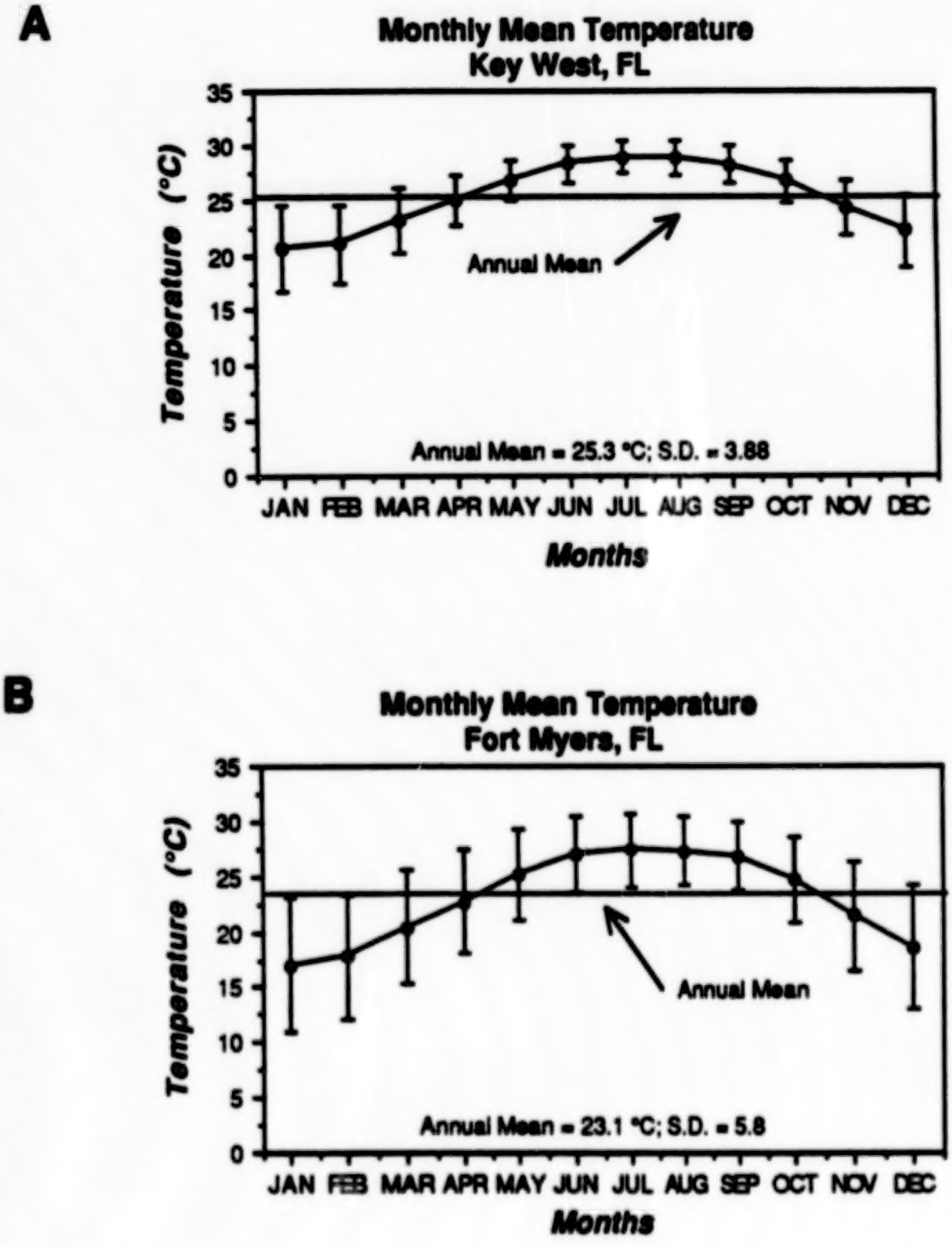
Table 2.4.1-2 Seasonal means of air temperature (°C) for each of the 7 NDBC CMAN stations analyzed in this study. Note these records have maximum lengths of 1-3 years.

STA	April	May-Oct. Summer	November	Dec.-Mar. Winter
ALRF1[2]	21.88	27.48	25.34	21.72
VENF1[1]	20.08	25.56	20.26	17.56
CSBF1[3]	19.03	25.68	19.42	13.84
BURL1[3]	19.58	26.43	20.08	11.17
GDIL1[3]	20.49	26.33	19.49	14.01
SRST2[3]	19.70	25.54	17.20	12.03
PTAT2[3]	20.60	26.17	19.01	14.30

[1] One year record

[2] Two year record

[3] Three year record



Monthly Mean Temperature
Key West, FL

Monthly Mean Temperature
Fort Myers, FL

Figure 2.4.1-1a-b Monthly mean air temperatures with standard deviation and annual mean for (a) Key West, Florida and (b) Fort Myers, Florida.

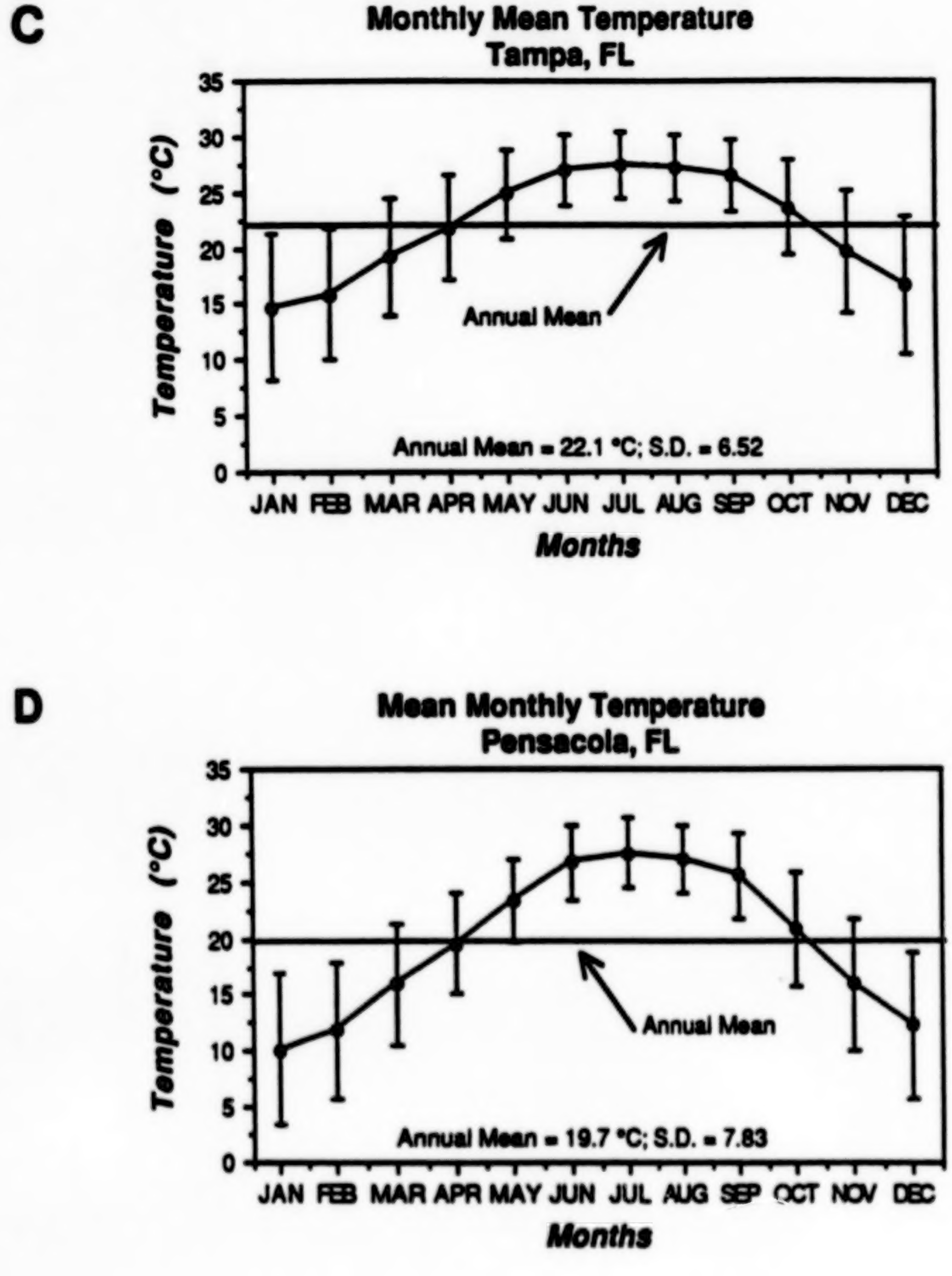


Figure 2.4.1-1c-d Monthly mean air temperatures with standard deviation and annual mean for (c) Tampa, Florida and (d) Pensacola, Florida.

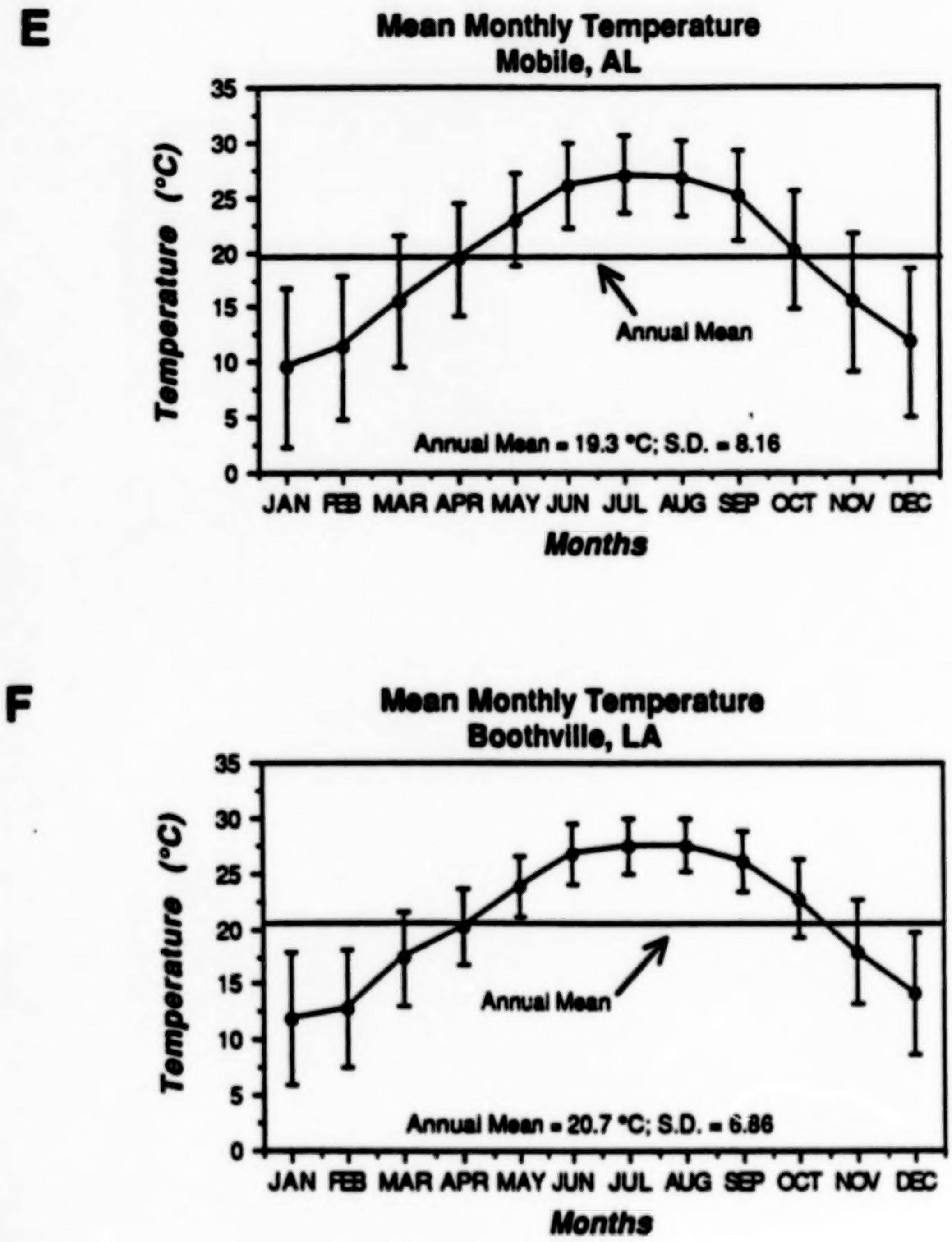


Figure 2.4.1-1e-f Monthly mean air temperatures with standard deviation and annual mean for (e) Mobile, Alabama and (f) Boothville, Louisiana.

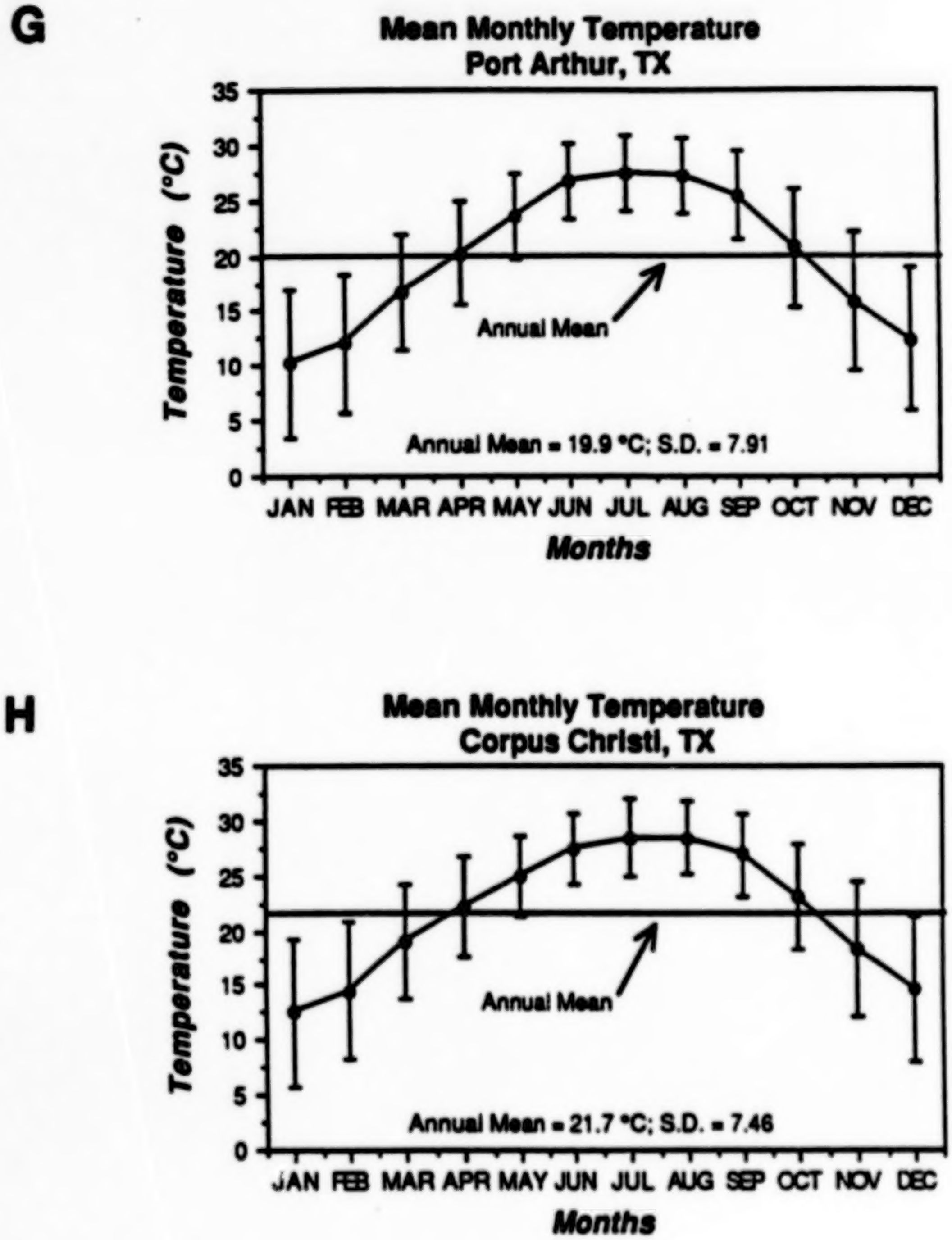


Figure 2.4.1-1g-h Monthly mean air temperatures with standard deviation and annual mean for (g) Port Arthur, Texas and (h) Corpus Christi, Texas.

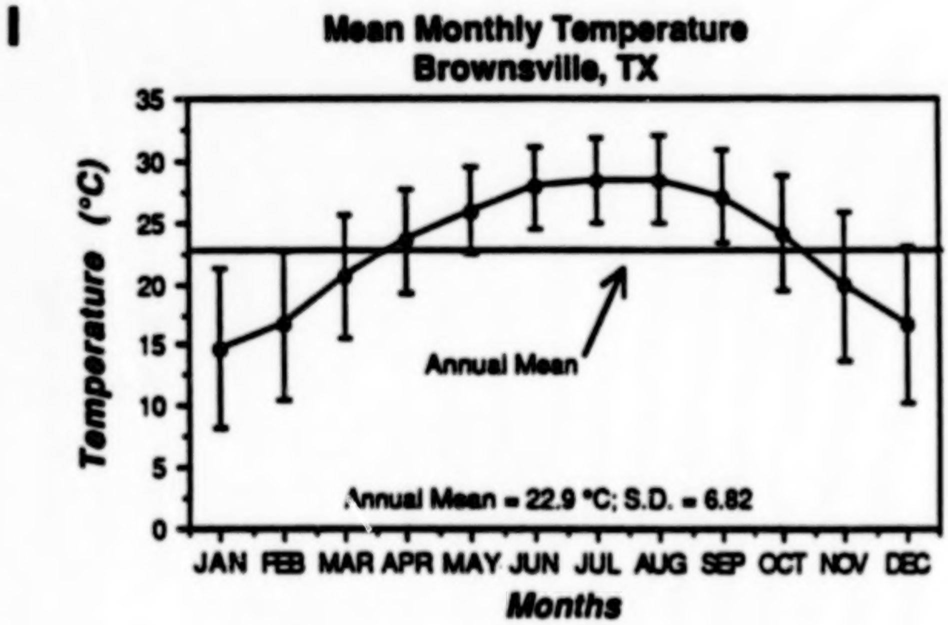


Figure 2.4.1-1i Monthly mean air temperatures with standard deviation and annual mean for (i) Brownsville, Texas.

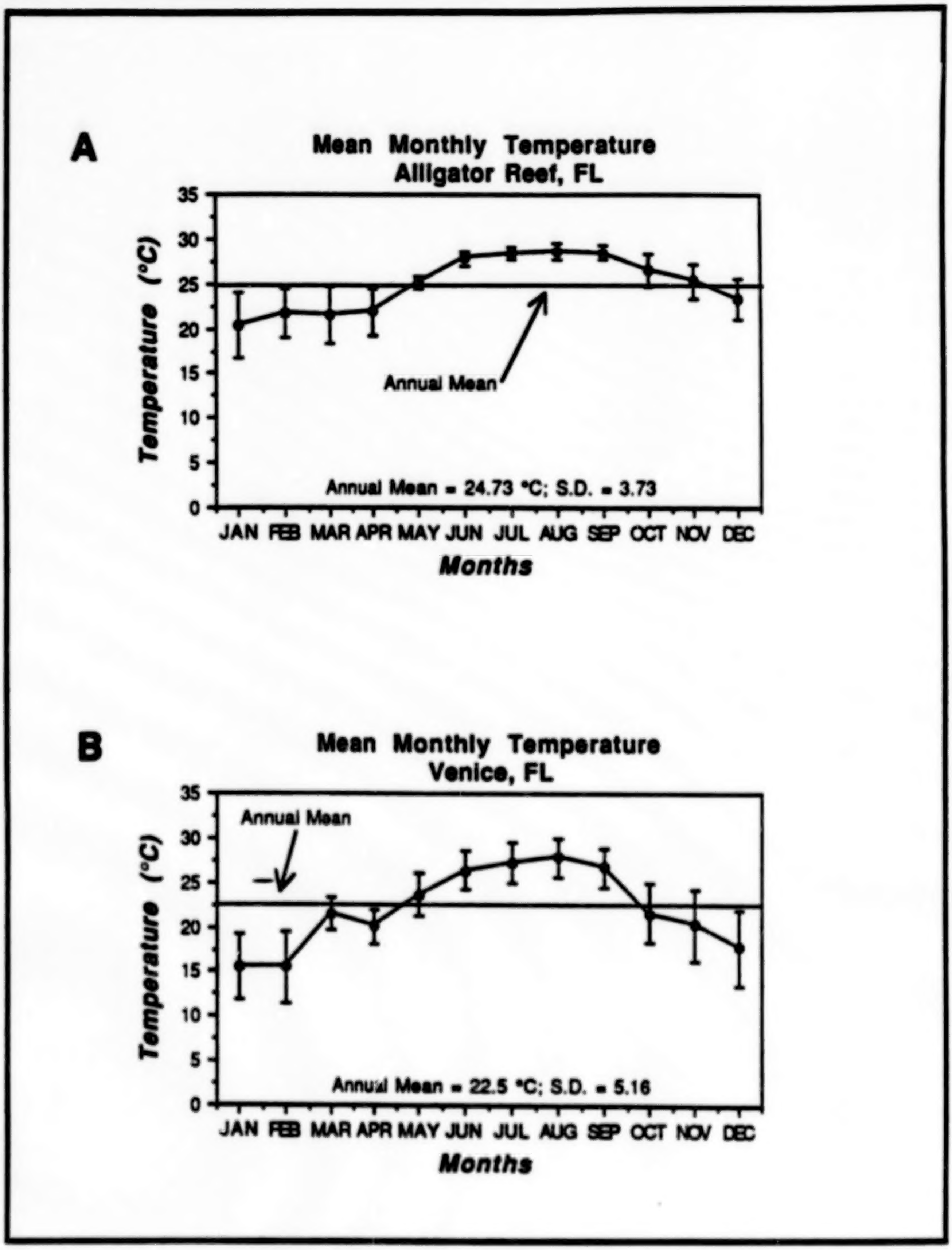


Figure 2.4.1-2a-b Monthly mean air temperatures with standard deviation and annual mean for (a) Alligator Reef, Florida (b) Venice, Florida.

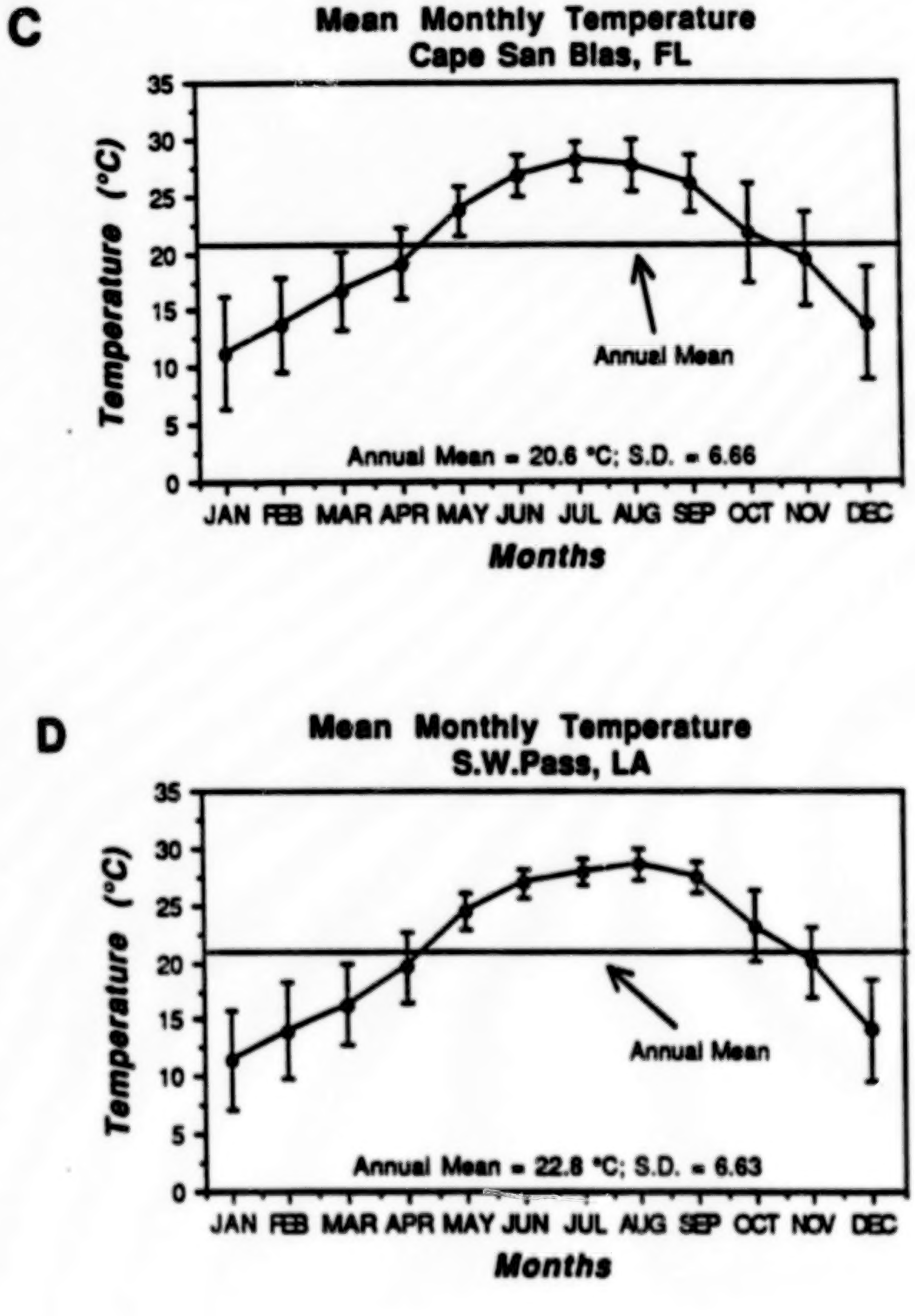


Figure 2.4.1-2c-d Monthly mean air temperatures with standard deviation and annual mean for (c) Cape San Blas, Florida and (d) Southwest Pass, Louisiana.

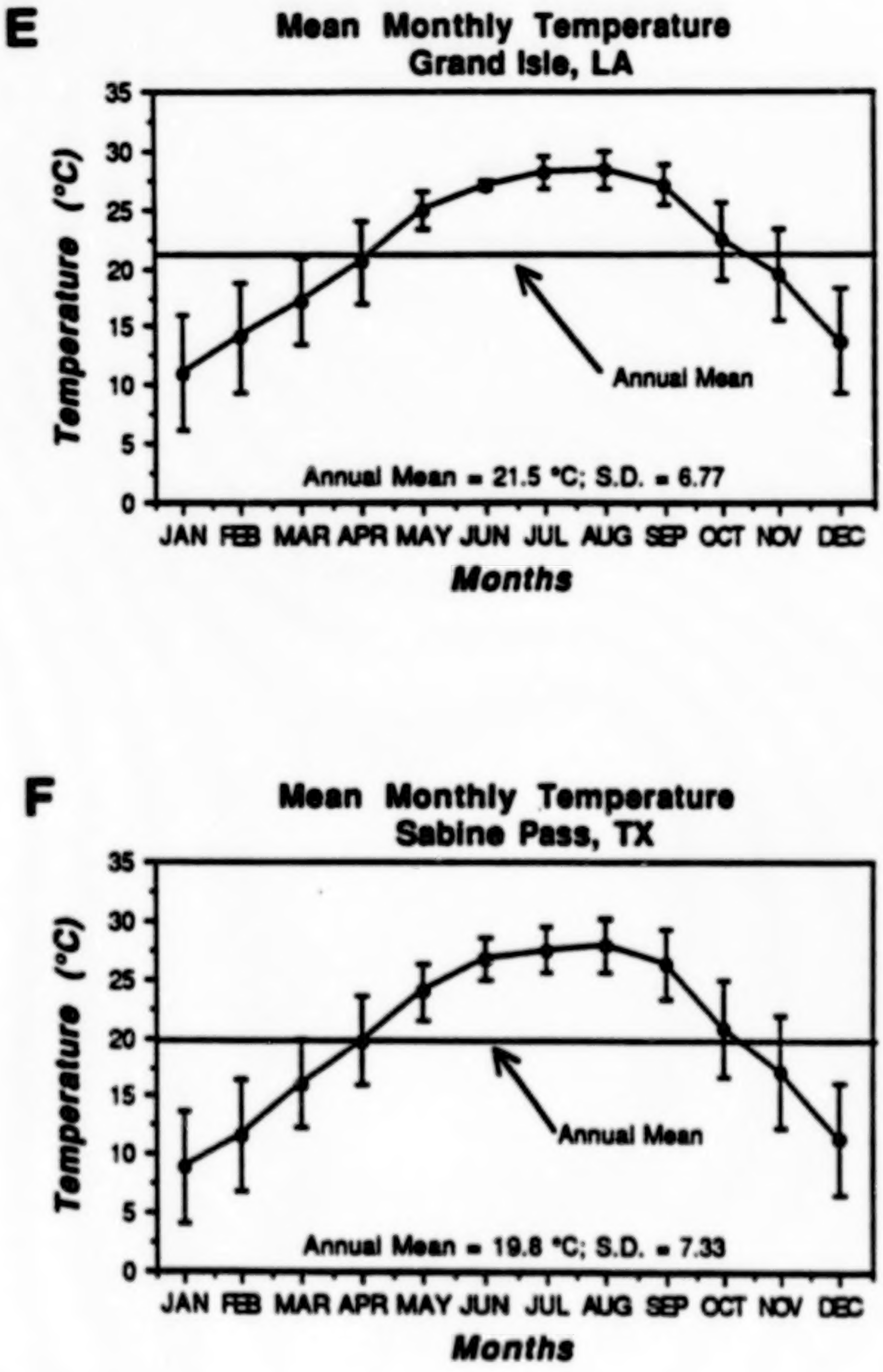


Figure 2.4.1-2e-f Monthly mean air temperatures with standard deviation and annual mean for (e) Grand Isle, Louisiana and (f) Sabine Pass, Texas.

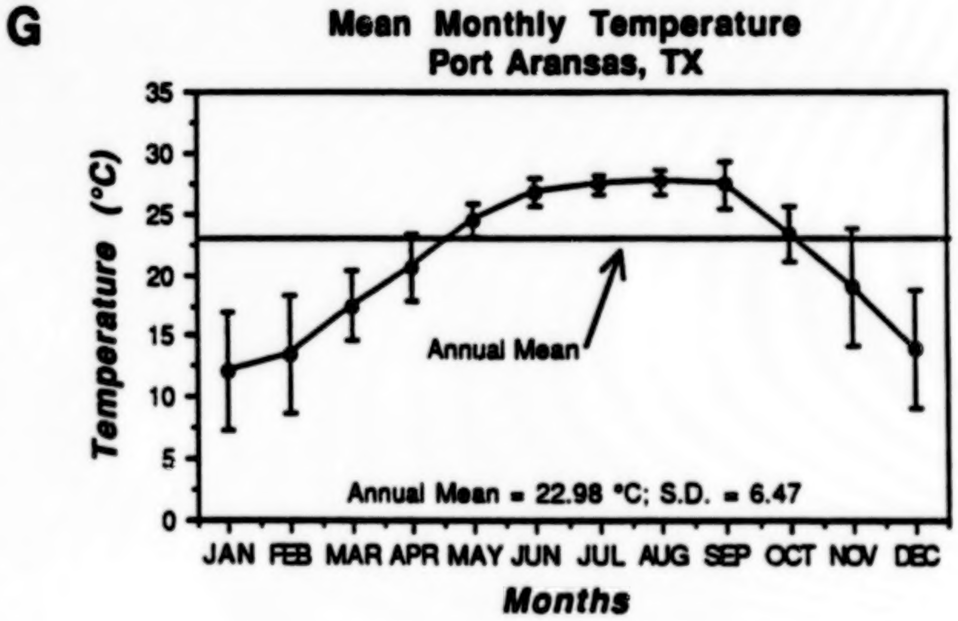


Figure 2.4.1-2g Monthly mean air temperatures with standard deviation and annual mean for (g) Port Aransas, Texas.

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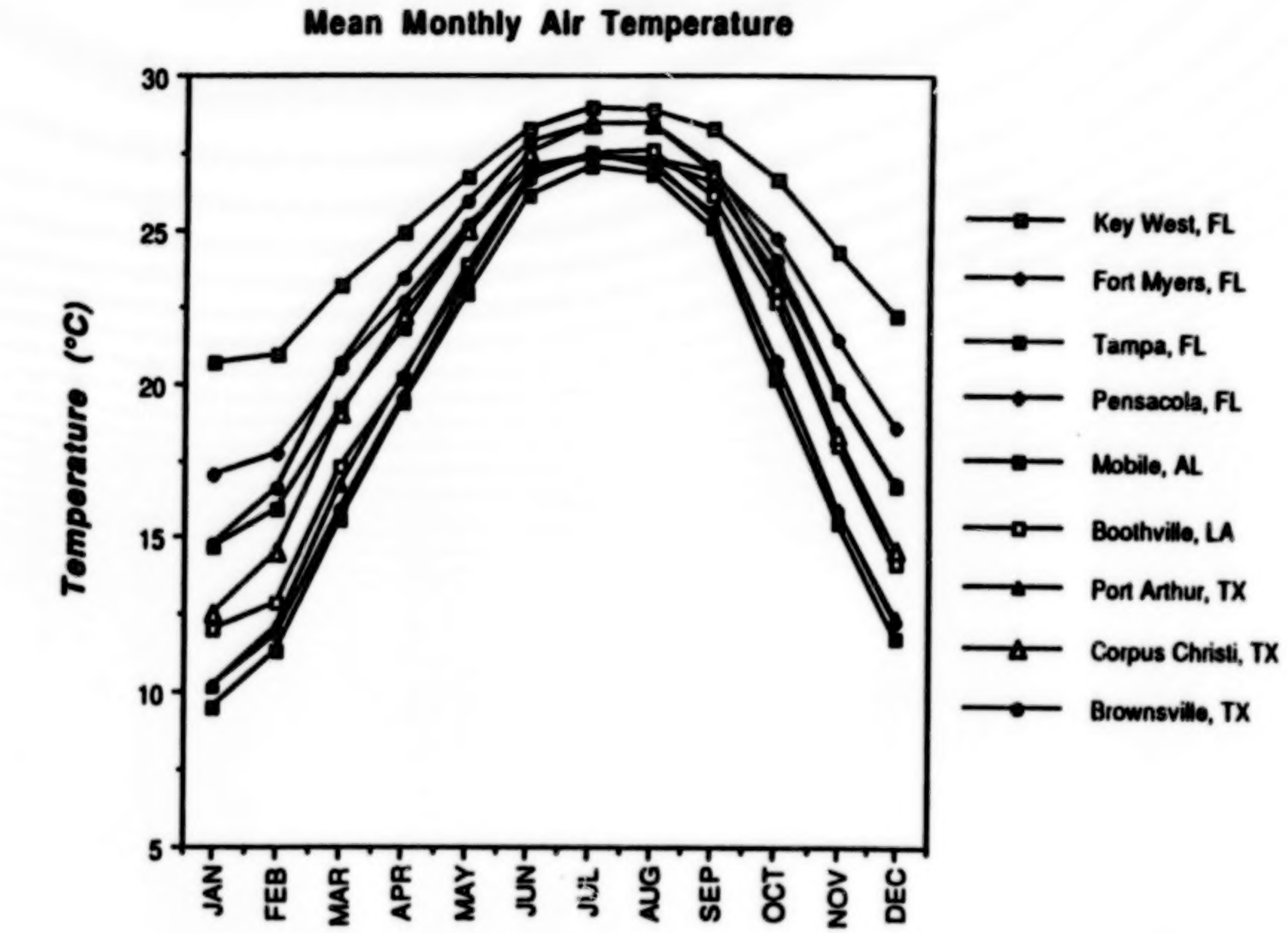

Figure 2.4.1-3 Composite mean monthly air temperatures for the 9 NWS coastal stations surrounding the Gulf of Mexico.

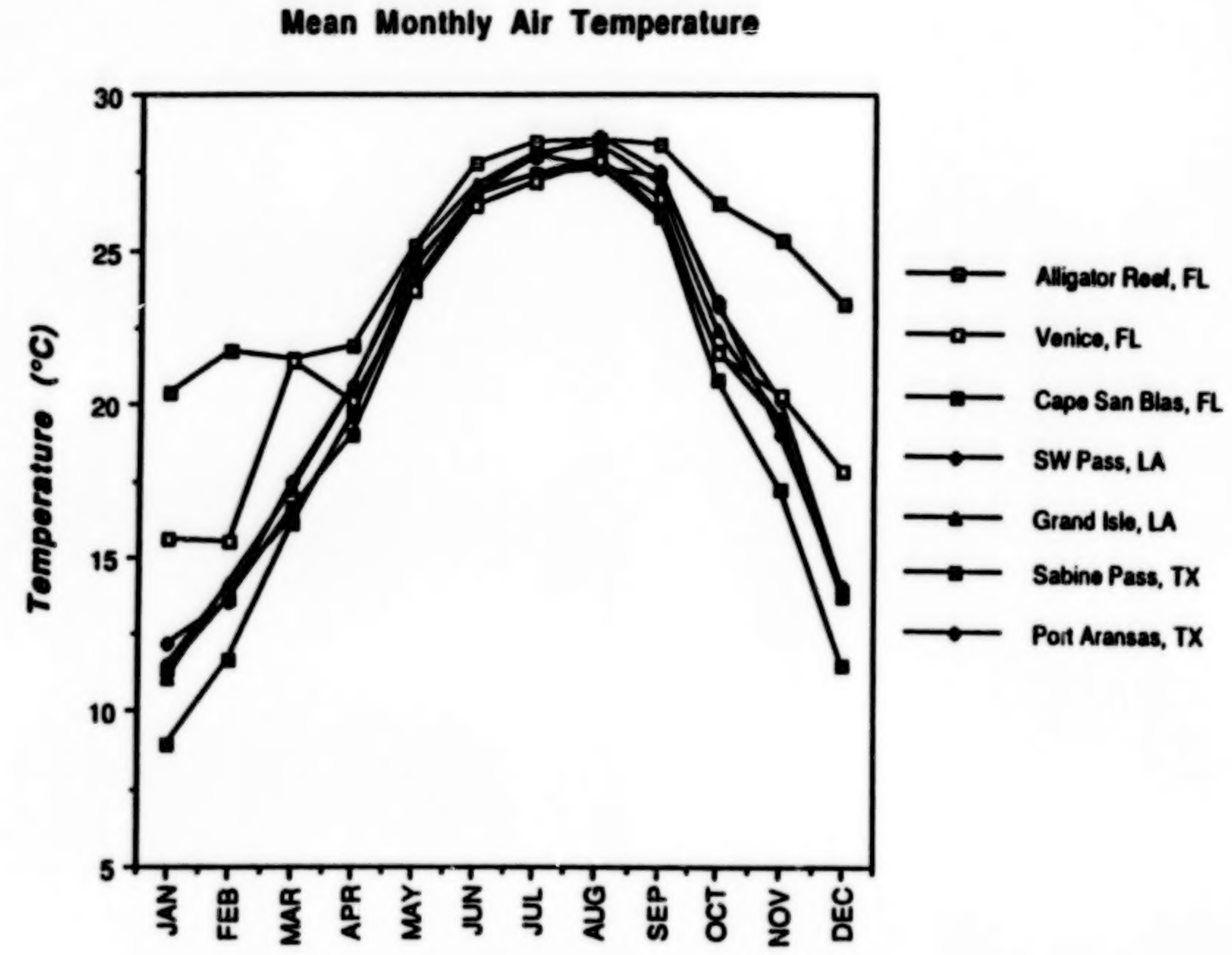

Figure 2.4.1-4 Composite mean monthly air temperatures for the 7 NDBC CMAN stations surrounding the Gulf of Mexico.

Temperature variation in the spring was north-south again, with the Mobile-Key West difference of 5.58°C being the largest for the NWS coastal stations. However, including the shorter NDBC CMAN records, the largest difference was found between Cape San Blas and Key West (5.89°C). East-west differences for both data sets were on the order of 1°C. In the fall transition period (November), the temperature variability pattern was similar. However, the north-south difference from Key West-Mobile was 8.81°C. The Mobile-Alligator Reef difference was 9.89°C; however, the mean value for Alligator Reef is based only on a 2-year record (1986-1987). Also, given that November 1986 was considerably warmer than the long-term mean for that month, this latter north-south difference (9.89°C) may be considered erroneous. Both Boothville and Southwest Pass were approximately 2°C and 0.5°C warmer respectively, than the stations east and west along the northern Gulf coast. This phenomena being attributed to the buffering effect of the warmer water surrounding these stations.

2.4.2 Sea Surface Temperature Climatology

The winter sea surface temperature climatology is presented for December through March in Figures 2.4.2-1 through 2.4.2-4. In these figures, the Loop Current is easily discerned, penetrating to as far as approximately 27°N in the eastern Gulf. Surface temperatures range from around 26.0°C-27.0°C in the Yucatan Straits to 23.0°C-24.5°C near 27°N. Western central Gulf waters are generally 2-2½° cooler than Loop Current core waters, and strong thermal gradients are observed on the northern continental shelf. The coolest central Gulf waters are observed in February and March, and January and February shelf gradients appear to show the influence of river runoff in some areas.

The summer sea surface temperature climatology is presented for May through October in Figures 2.4.2-5 through 2.4.2-10. In these figures, the Loop Current is only discernable in May and suggested in October as the Gulf-wide sea surface temperatures are generally characterized by less than 1° of variability, east to west and north to south. No significant shelf features are discernable.

Seasonally, April and November are regarded as transition months. As such, the sea surface temperature climatology for these months is presented in Figures 2.4.2-11 and 2.4.2-12. These figures are similar to the winter months, with the same general trends, except that surface temperatures throughout the Gulf are warmer in November and April than in the subsequent or preceding months of December or March, respectively. In November the shelf gradients are well-established, particularly off the Texas/Louisiana border and around Tampa, Florida. In April, these same gradients have decreased significantly. Referring back to the May-October climatology (Figures 2.4.2-5 and 2.4.2-10), these shelf gradients are gone in May, and begin reappearing in October.

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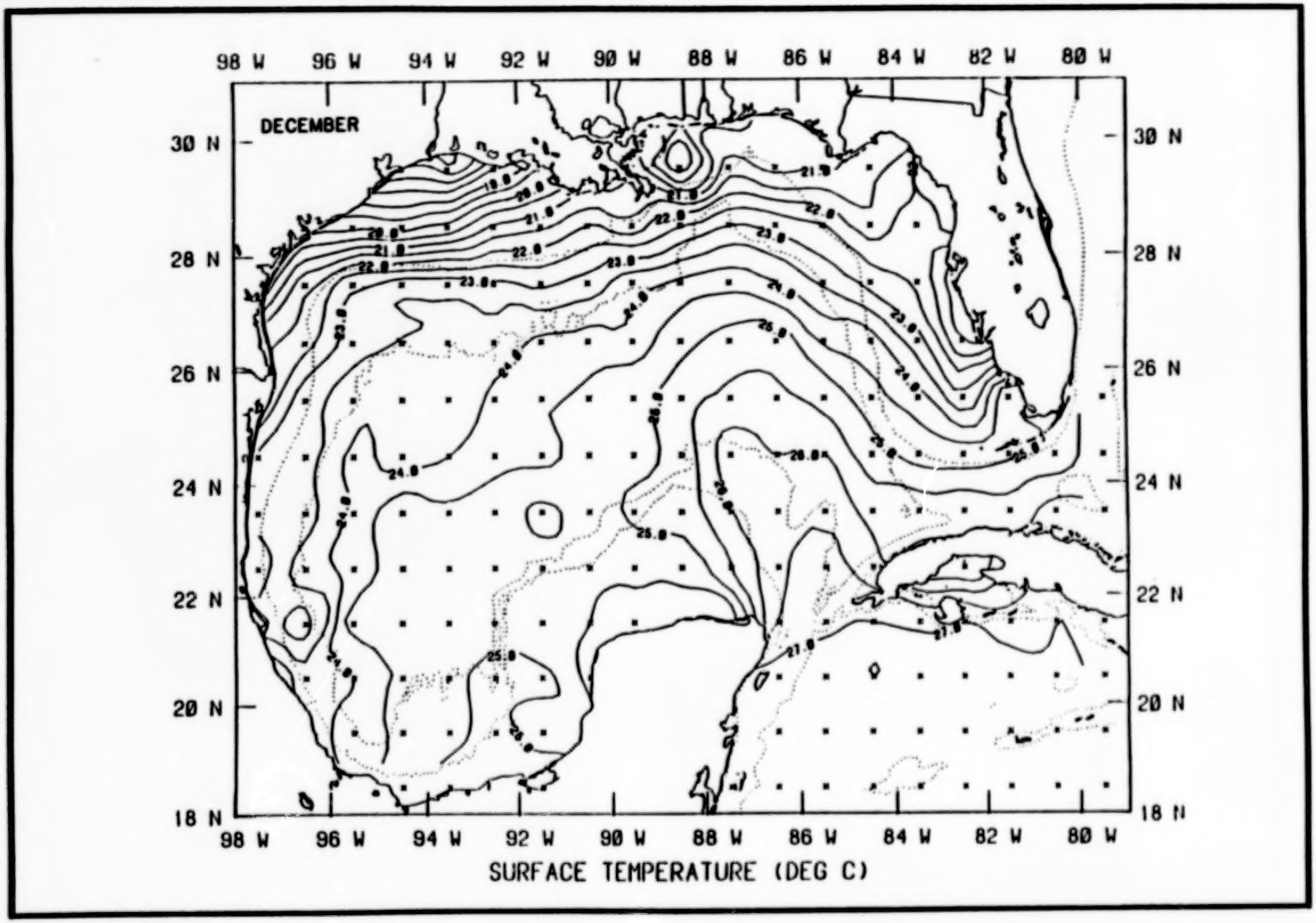

Figure 2.4.2-1 Computer-generated sea surface temperature (SST) climatology derived from the data set compiled by Baltz (1978) for December.

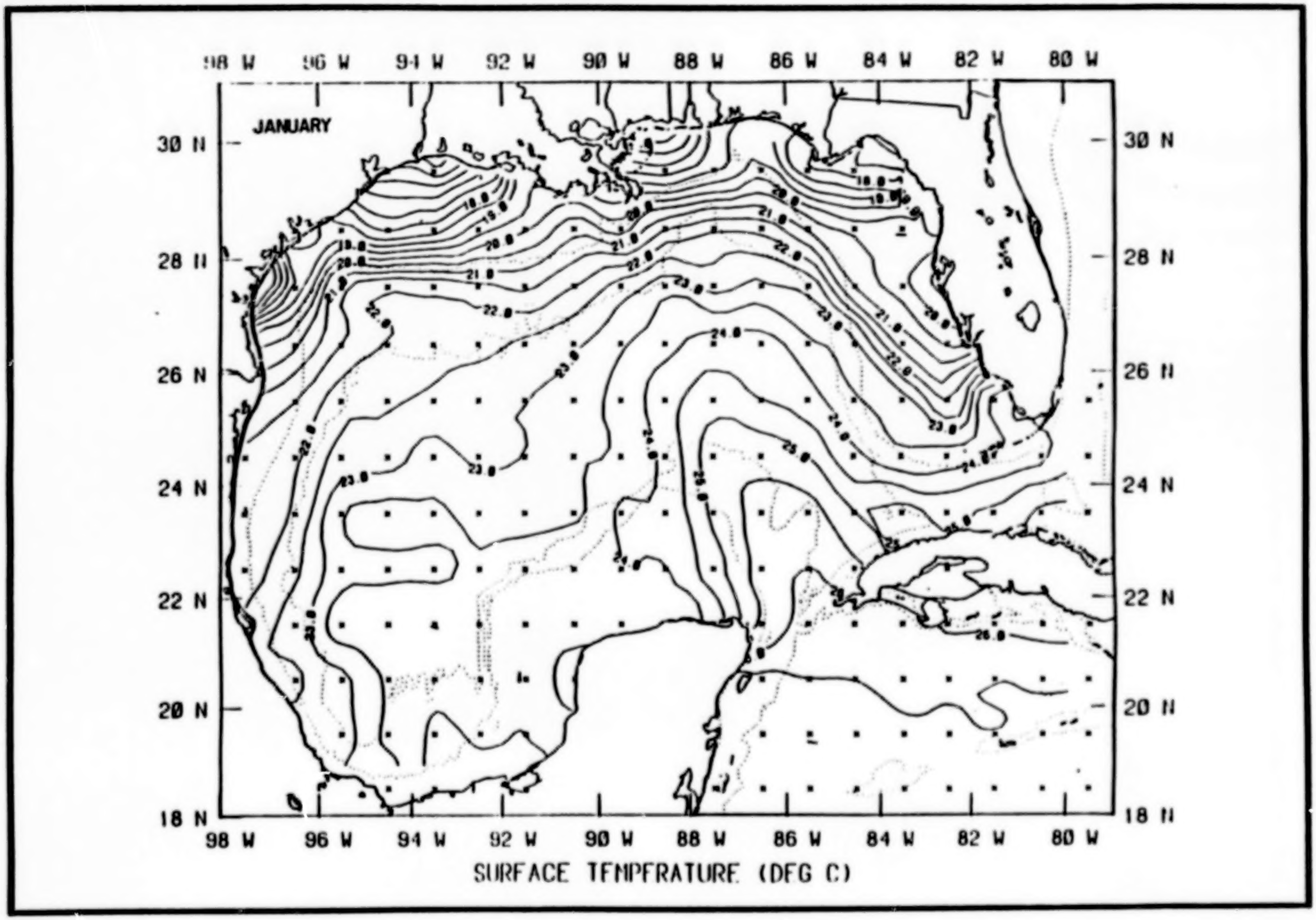

Figure 2.4.2-2 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for January.

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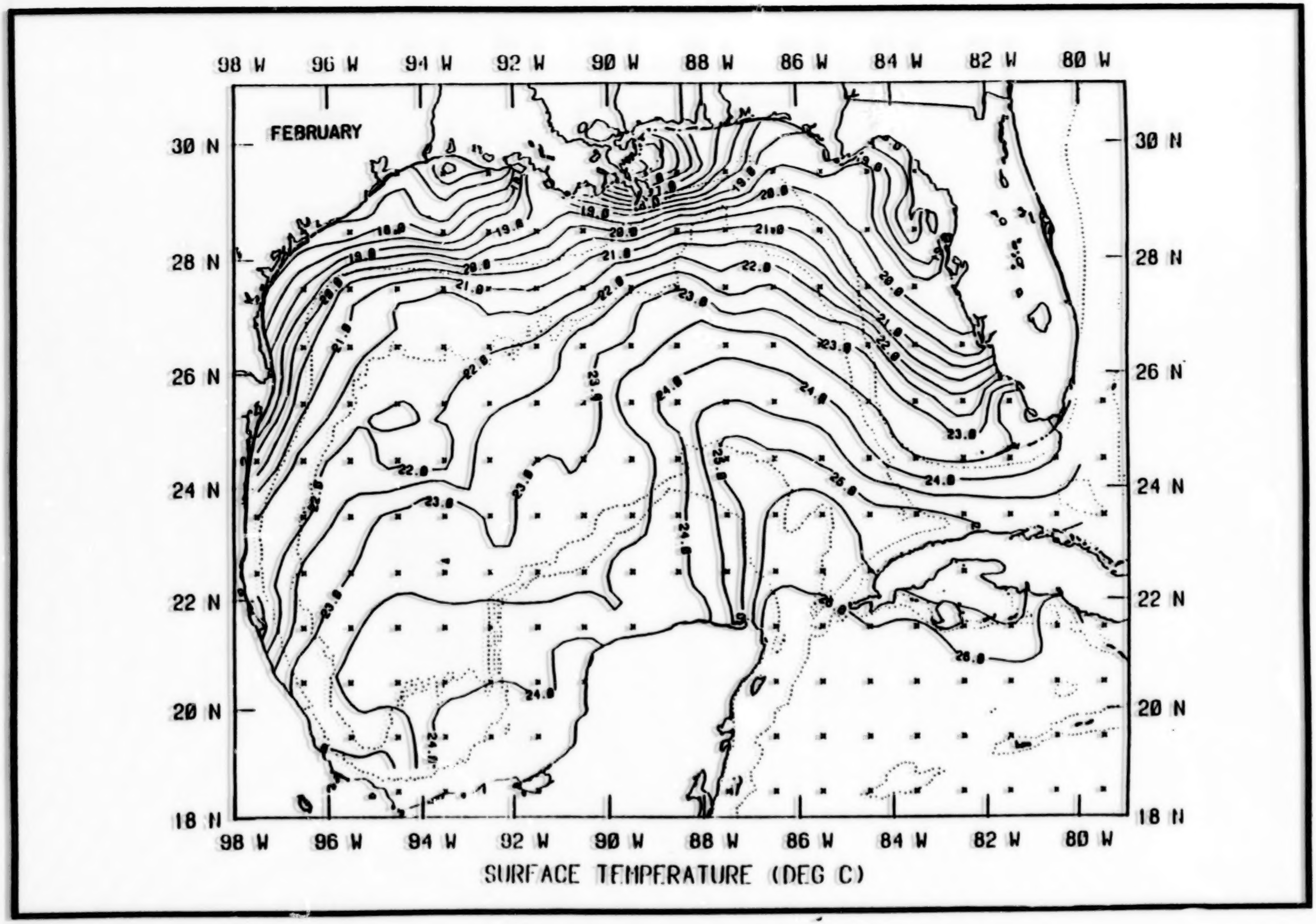

Figure 2.4.2-3 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for February.

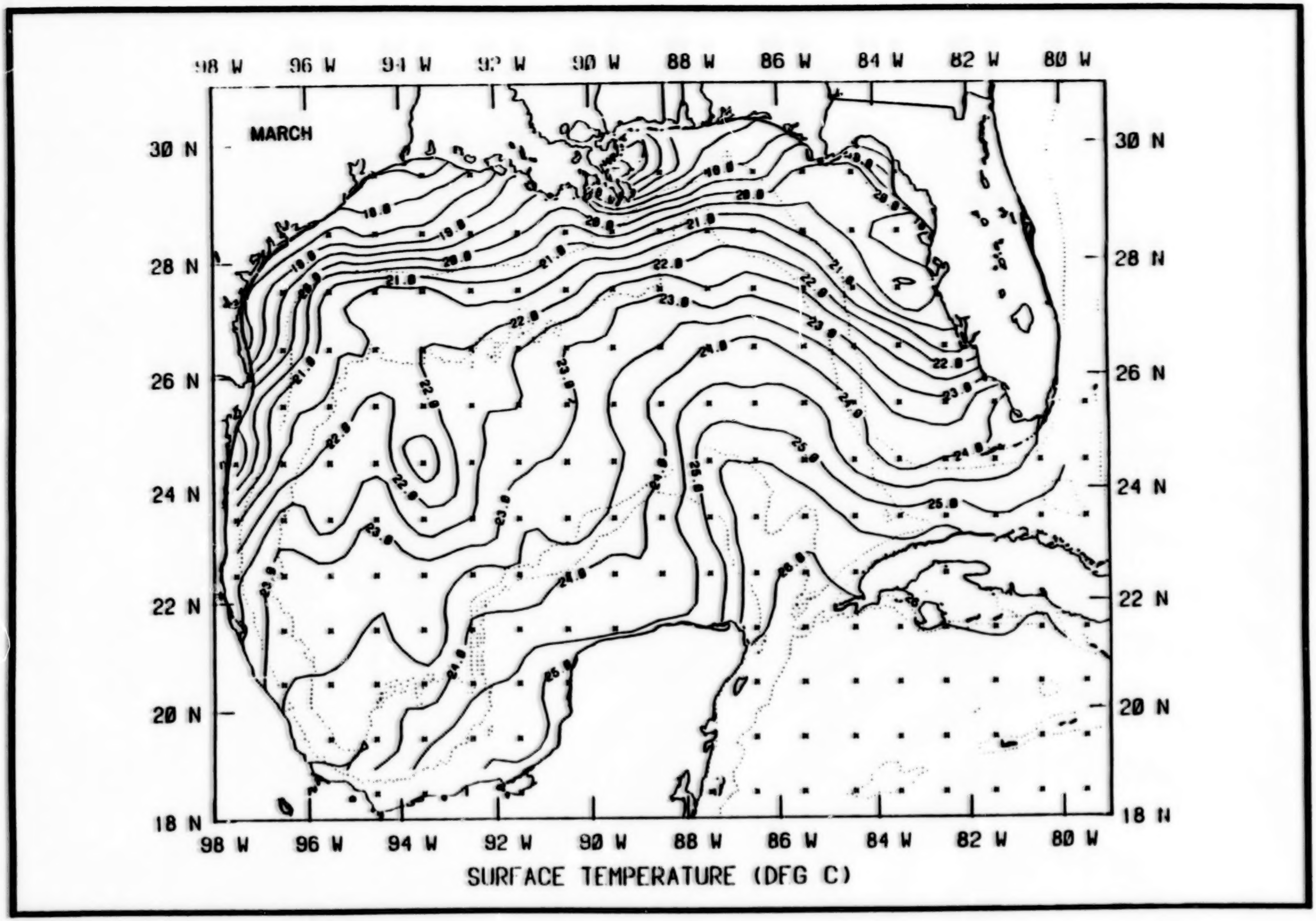

Figure 2.4.2-4 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for March.

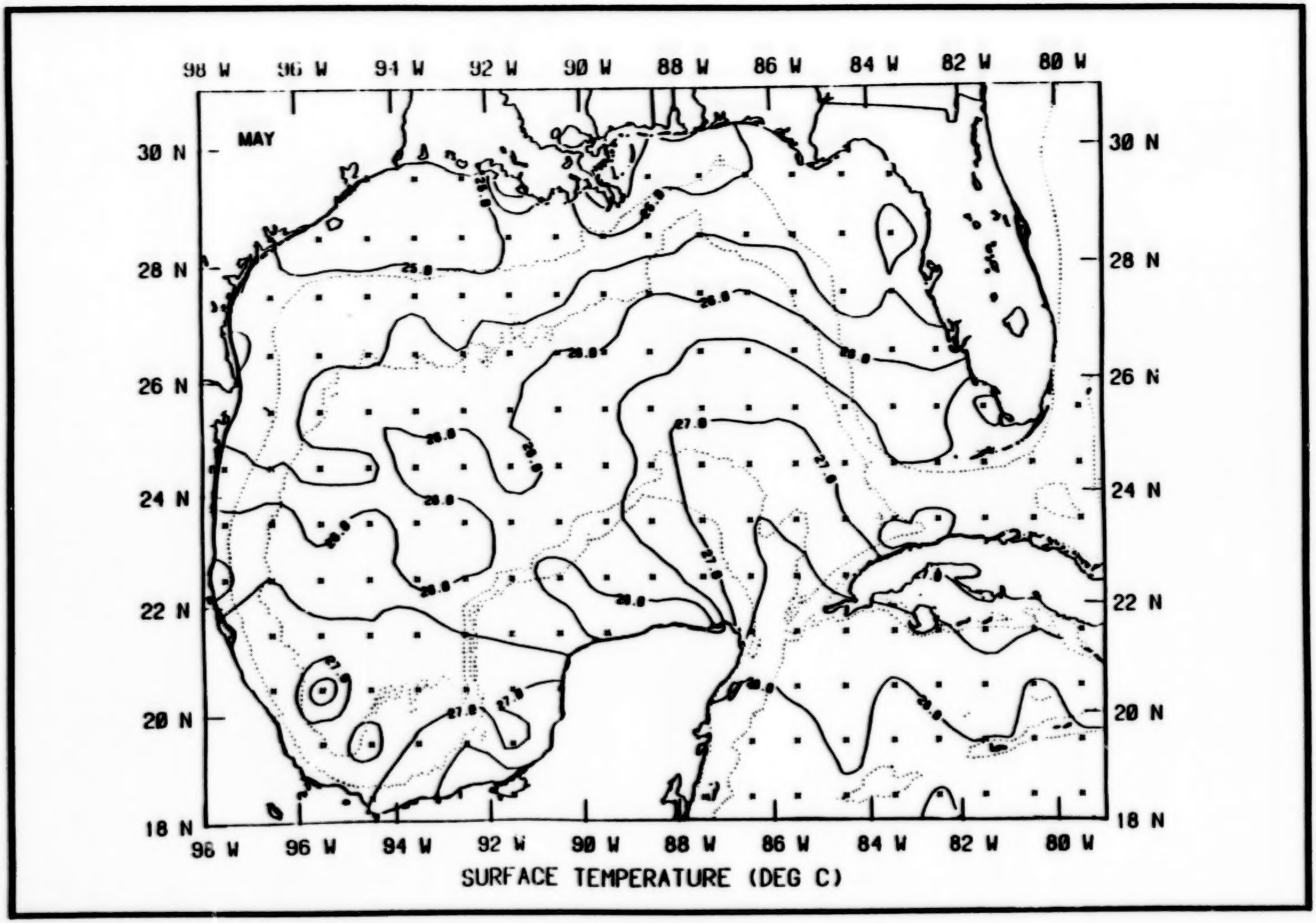

Figure 2.4.2-5 **Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for May.**

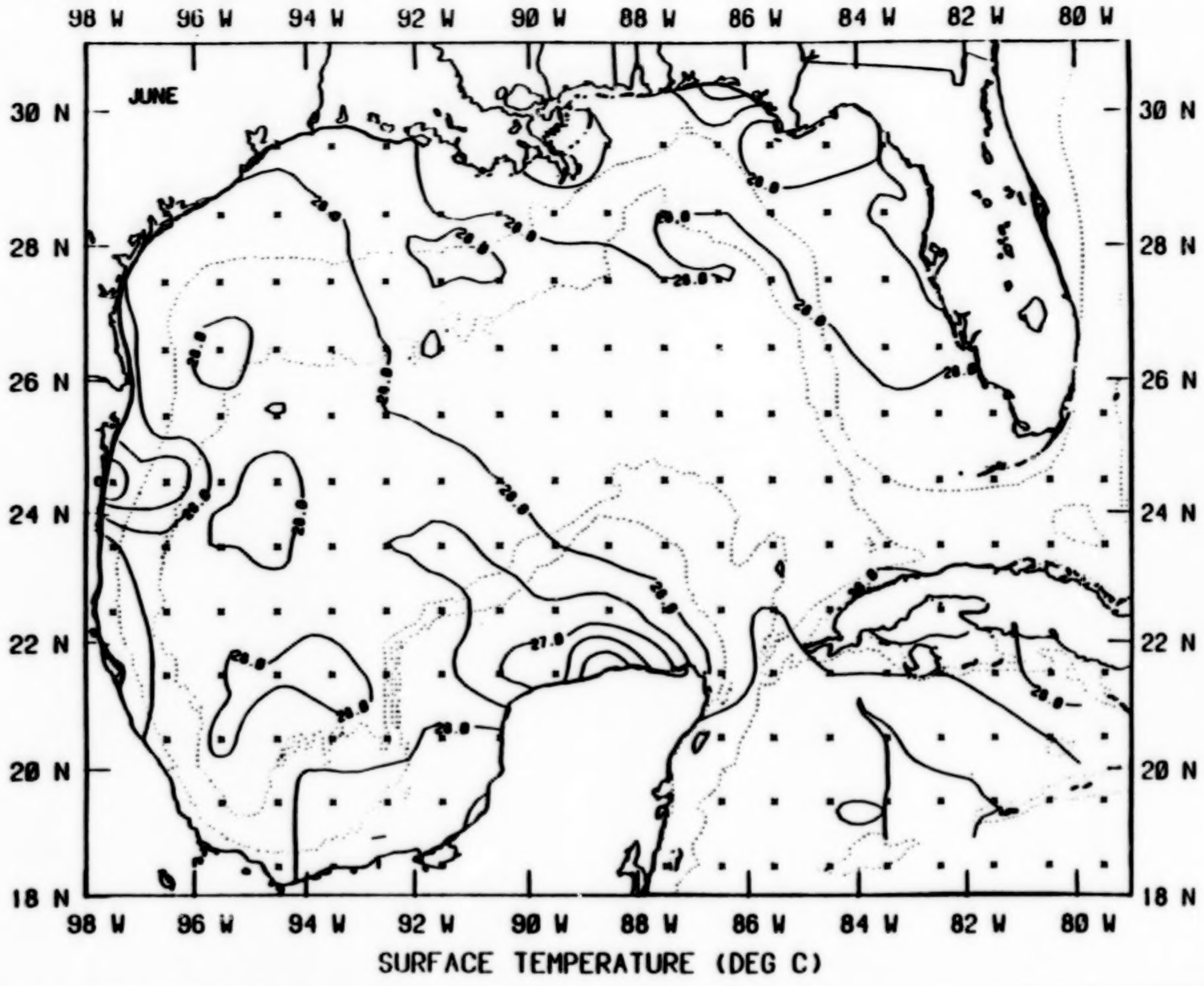

Figure 2.4.2-6 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for June.

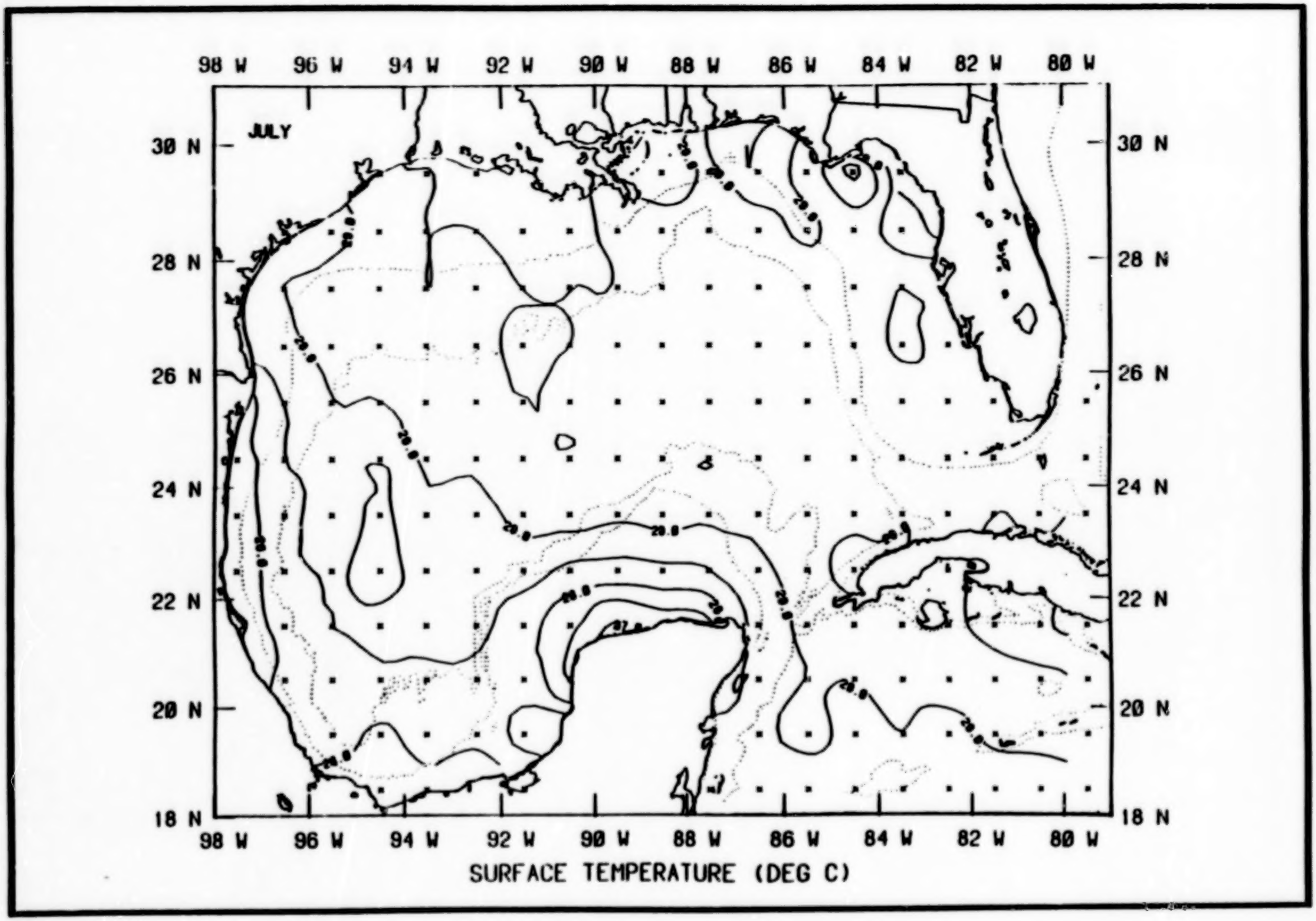

Figure 2.4.2-7 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for July.

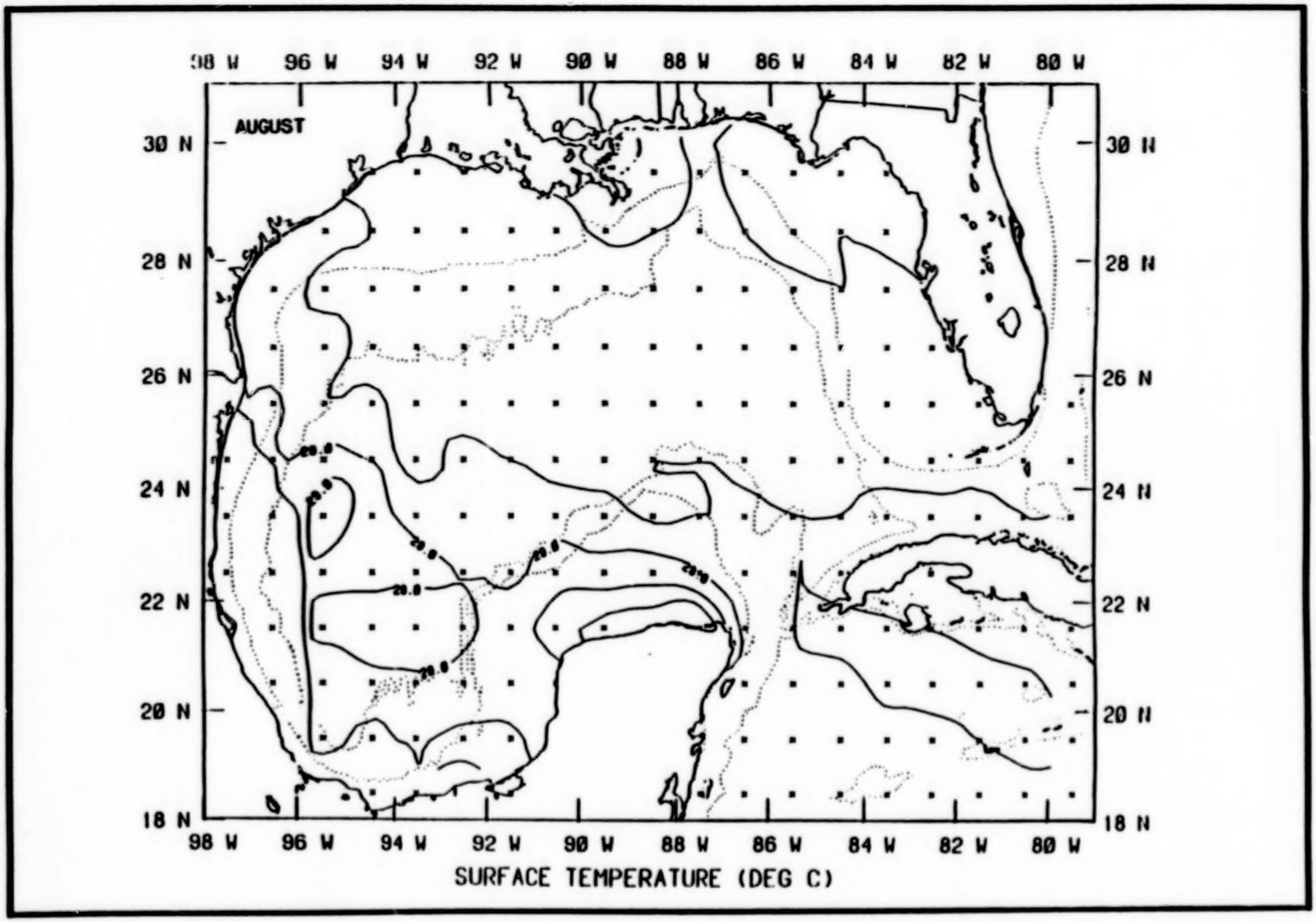

Figure 2.4.2-8 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for August.

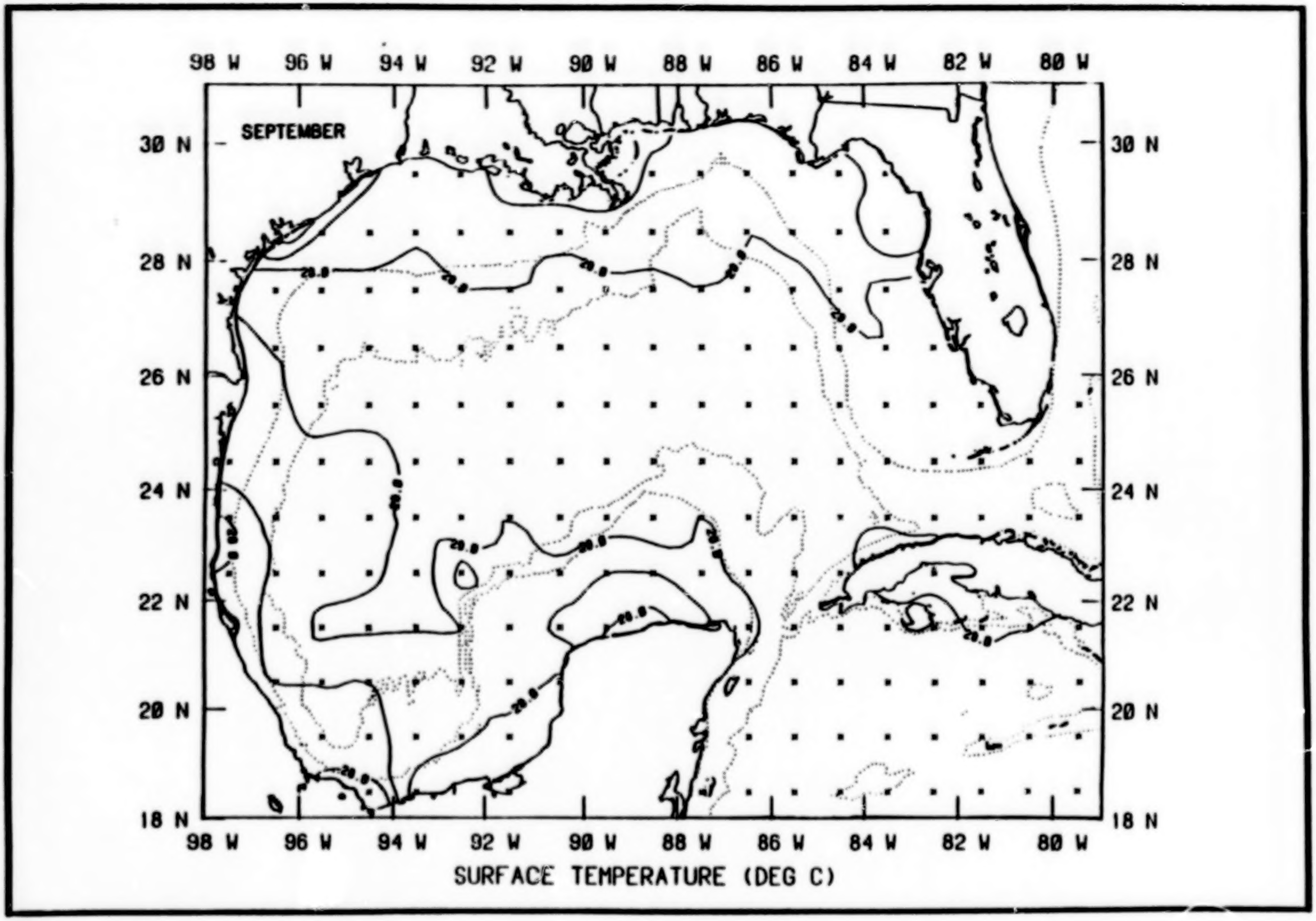

Figure 2.4.2-9 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for September.

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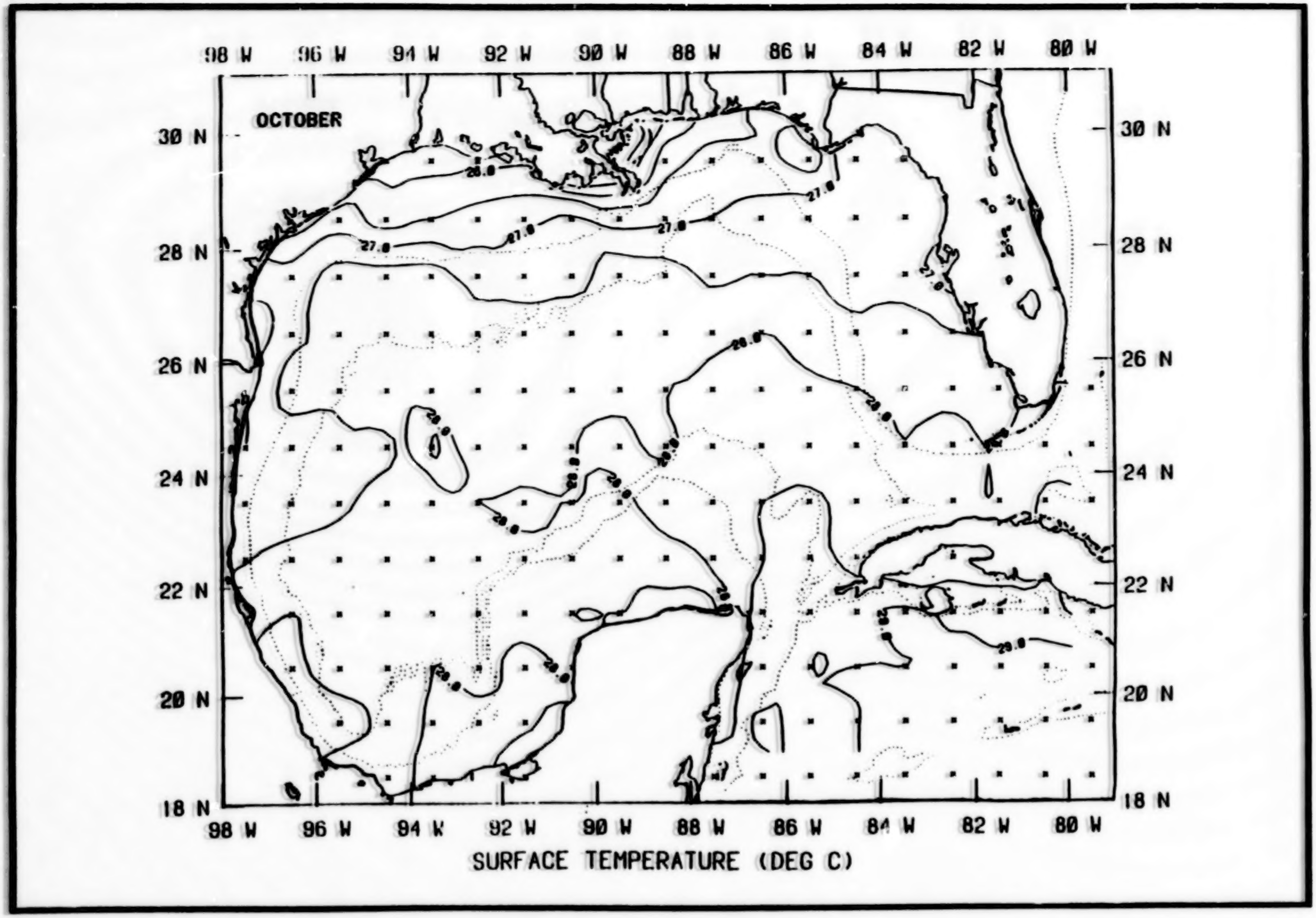


Figure 2.4.2-10 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for October.

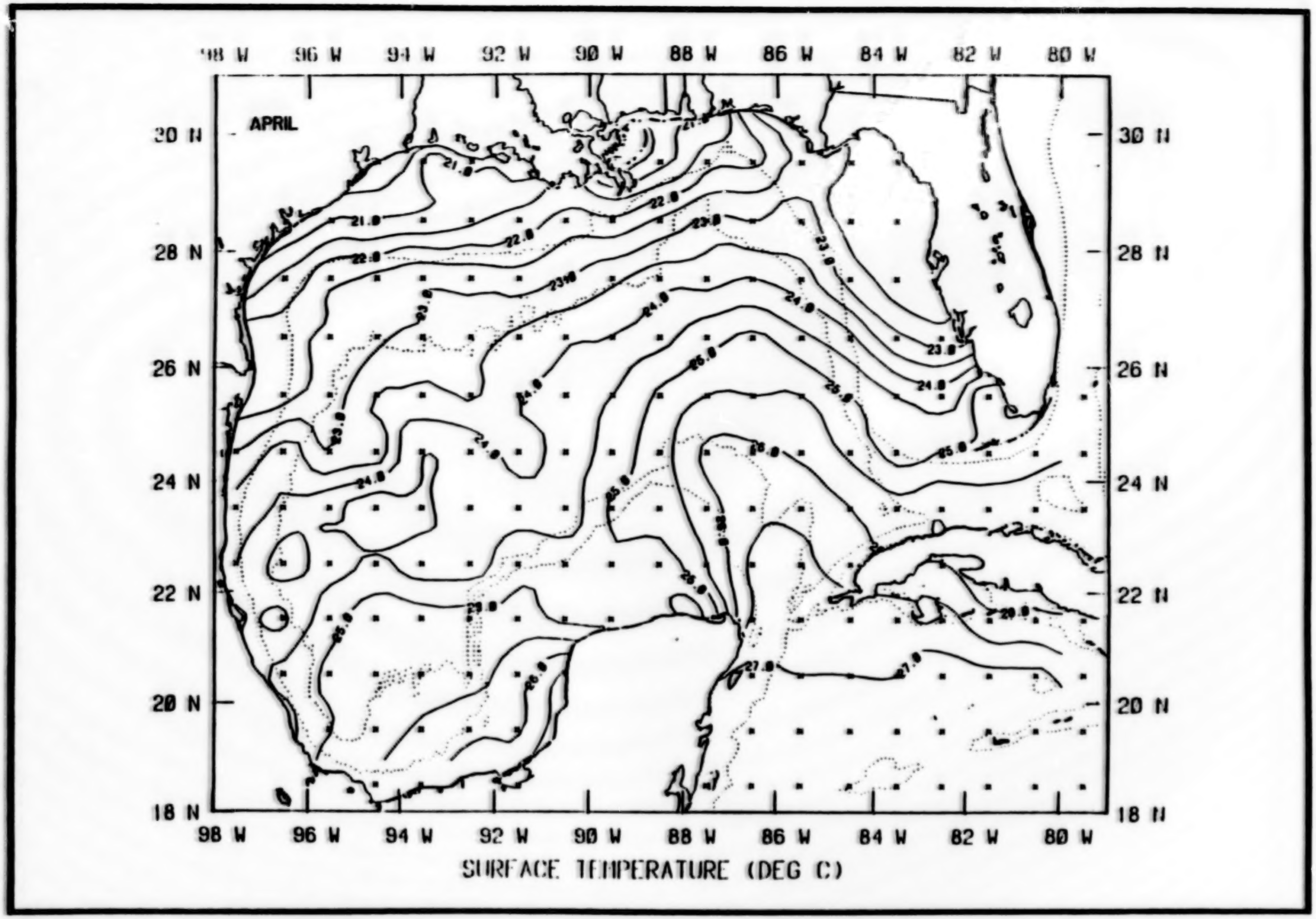


Figure 2.4.2-11 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for April.

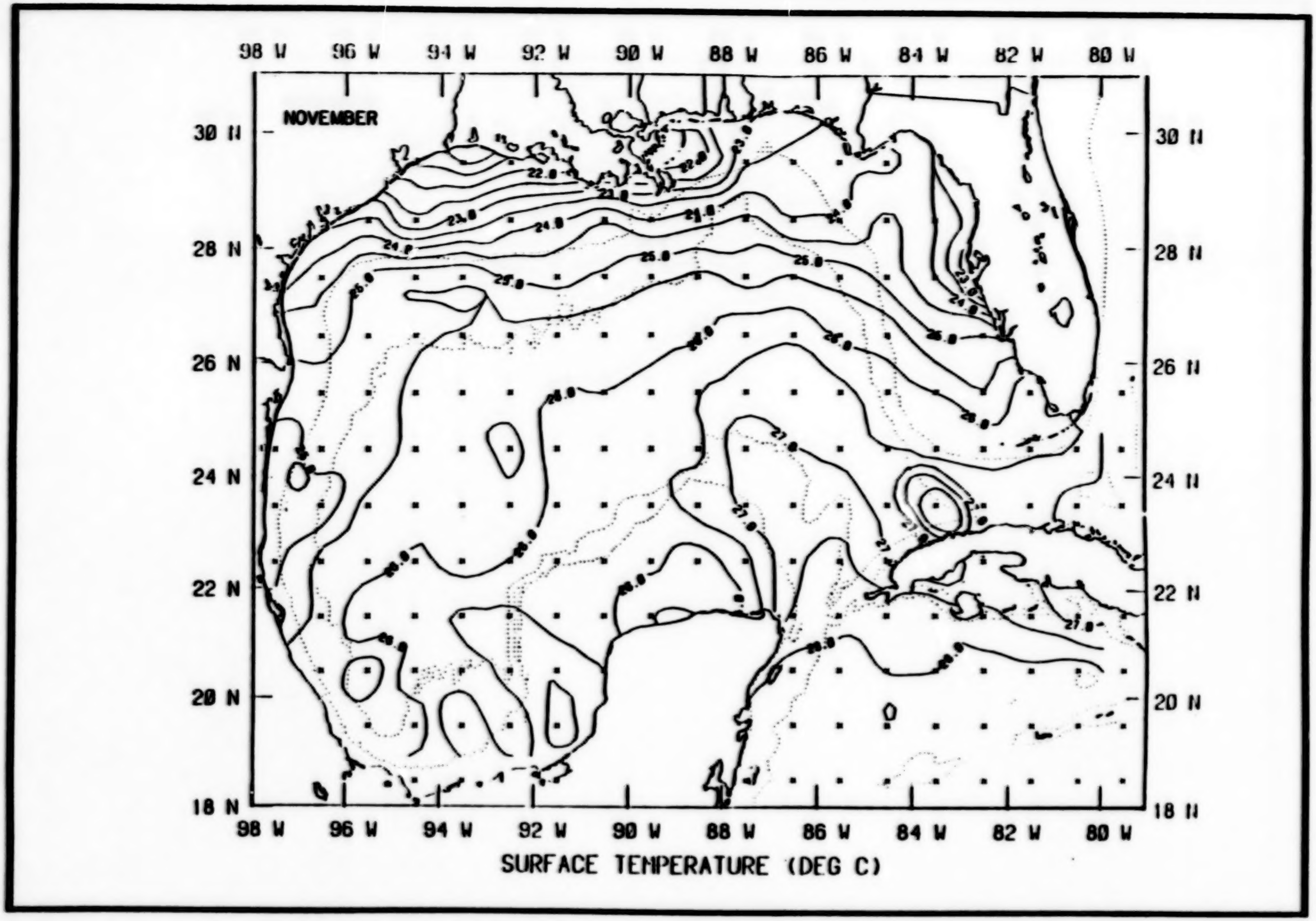


Figure 2.4.2-12 Computer-generated SST climatology derived from the data set compiled by Baltz (1978) for November.

2.4.3 Sensible Heat Flux

Sensible heat flux is one measure of energy transfer between the ocean and atmosphere. The standard formulation is: $Q_H = - \rho_a C_H c_p |W| (T_a - T_w)$
where

Q_H - sensible heat flux (Wm^{-2})
ρ_a - air density, here 1.275 $Kg\ m^{-3}$
C_H - bulk transfer coefficient of sensible heat
C_p - specific heat at constant pressure, here 1004.0 $J\ kg^{-1}\ K^{-1}$
$|W|$ - windspeed (ms^{-1})
T_a-T_w - air sea temperature difference (°C)

The values for the bulk transfer coefficient, C_H, are taken from Isemer and Hasse (1987). No correction for anemometer height has been made. Anemometer positions on the oceanographic data buoys are approximately 7.0 m above sea level.

Time series of sensible heat flux were computed from wind speed and air-sea temperature differences from buoys 42001, 42002, 42003, 42007 and 42008 and from CMAN stations at Alligator Reef, Florida; Venice, Florida; and Grand Isle, Louisiana. Buoys 42001, 42002 and 42003 yielded eight year-long data records beginning in 1979 with approximately 87% coverage in terms of sensible heat flux. Buoy 42007 gave a time series from 10 March 1984 to mid-December 1986 with approximately 90% coverage. Buoy 42008 gave a 2-year time series from October 1980 through September 1982 with 97.5% coverage. Wind speed and sea surface temperature data were collected at CMAN stations at Alligator Reef in 1986 and 1987 with 84.5% return, at Grand Isle from 1985 to 1987 with 96.9% return, and at Venice in 1987 with 85.8% return. Figure 2.2-5 shows the location of the buoys and the CMAN stations. Monthly means and variances of sensible heat flux were then computed from the time series. The statistical data are presented in tabular form in Appendix C (Sections C.2.4 and C.3.5). Figures 2.4.3-1a-e and 2.4.3-2a-c show the monthly mean and standard deviation for each buoy and CMAN station, respectively.

The seasonal pattern is for a peak in mean value and variance in December and January because of higher winds and greater air-sea temperature difference to a minimum in summer, caused by generally weak winds and small air-sea temperature differences. Strong interannual differences can occur. In 1982 there were periods early in the year of significant negative heat flux at buoy 42001, although these values were within the limits of one standard deviation from the mean. In contrast, the summer of 1984 showed higher than normal positive heat flux, which was outside the range at 42001. Because the records from buoys 42007 and 42008 and from the CMAN stations are short, they are of limited value in showing long term patterns (1979-1986), although they are consistent with the patterns in the longer records. The 1-year record of the CMAN station at Venice, Florida, is not consistent with the long term pattern and probably represents an anomalous year at that location.

Seasonal variations were examined after computing a mean winter and a mean summer sensible heat flux from the monthly mean data. The winter value is the mean of monthly means for December through March and the summer value is the mean of

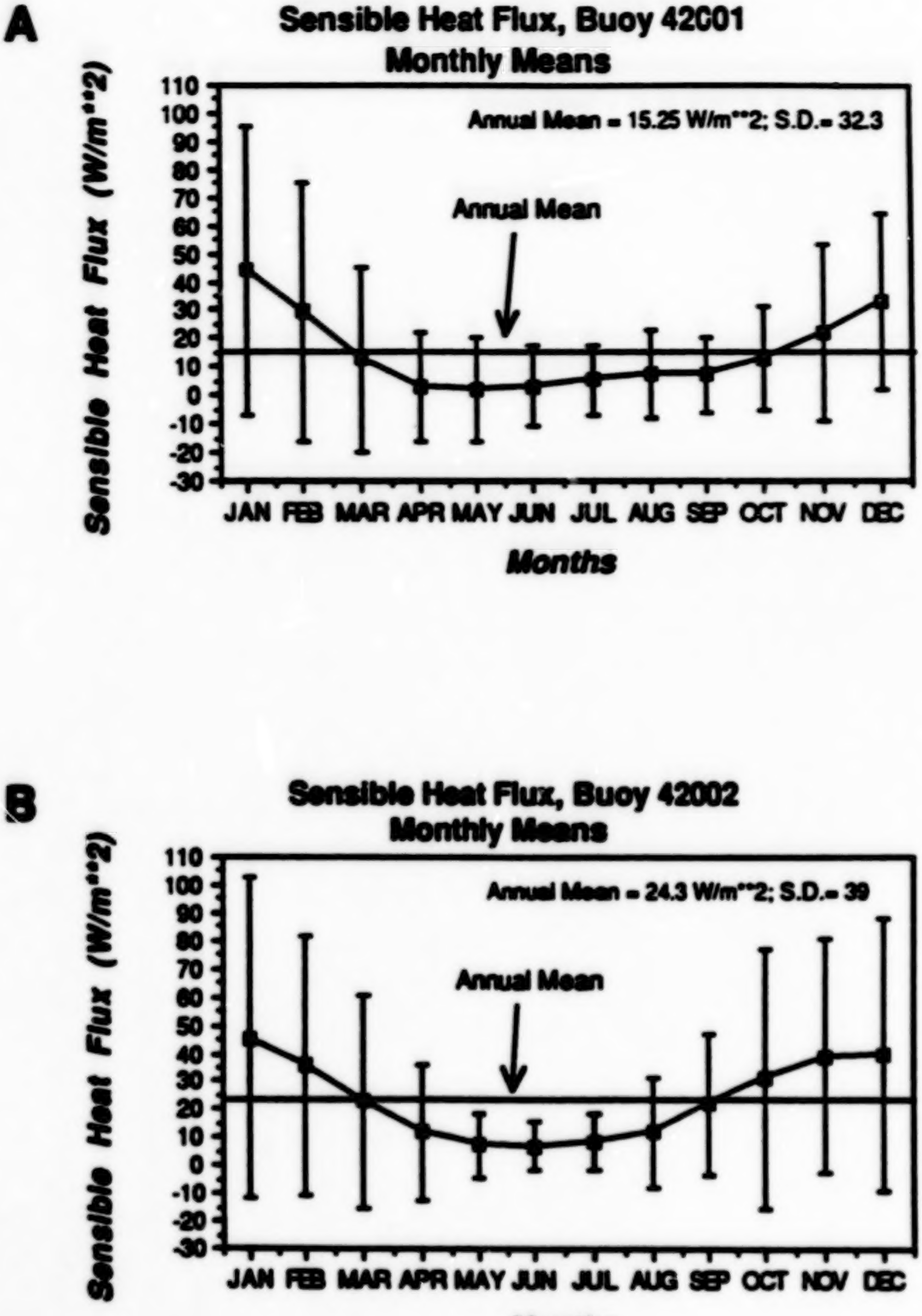


Figure 2.4.3-1a-b Monthly mean sensible heat flux (positive is vertically upwards or flux directed from water to air) with standard deviations and annual mean for NDBC buoys (a) 42001 and (b) 42002.

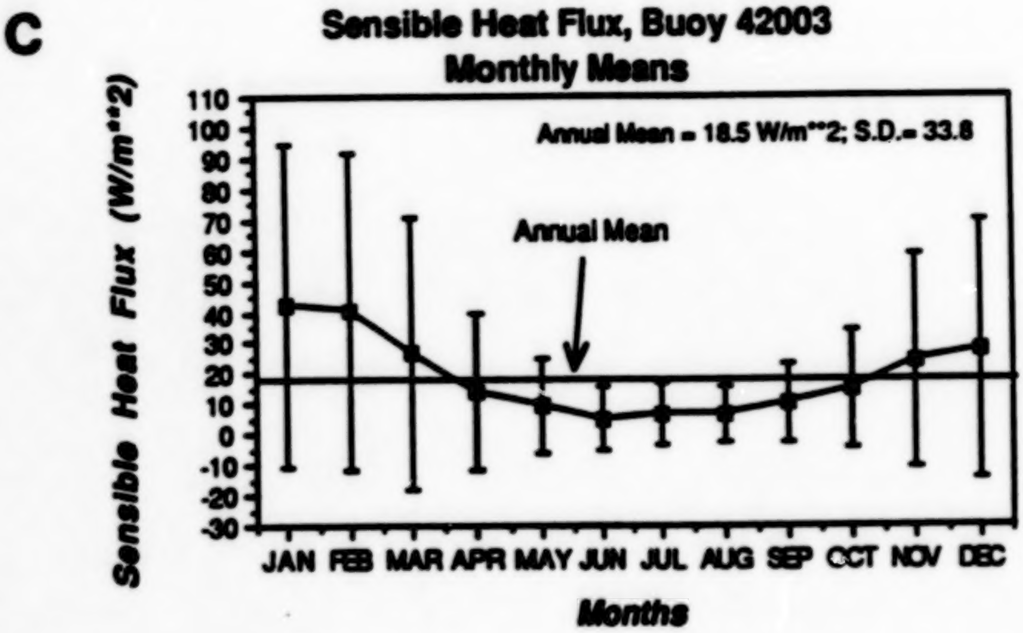
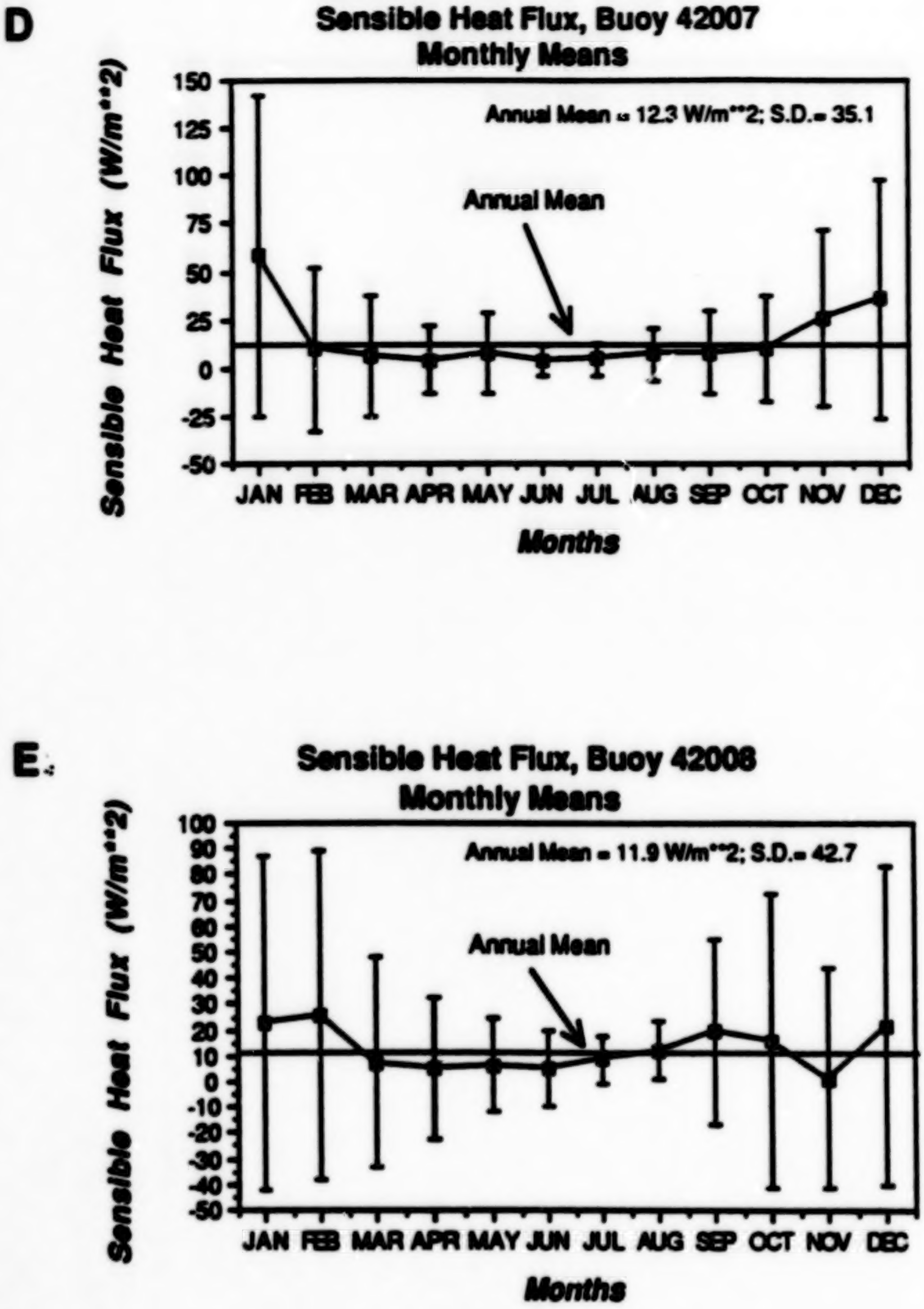


Figure 2.4.3-1c Monthly mean sensible heat flux (positive is vertically upwards or flux directed from water to air) with standard deviations and annual mean for NDBC buoy (c) 42003.



D Sensible Heat Flux, Buoy 42007
Monthly Means

E Sensible Heat Flux, Buoy 42008
Monthly Means

Figure 2.4.3-1d-e Monthly mean sensible heat flux (positive is vertically upwards or flux directed from water to air) with standard deviations and annual mean for NDBC buoys (d) 42007 and (e) 42008.

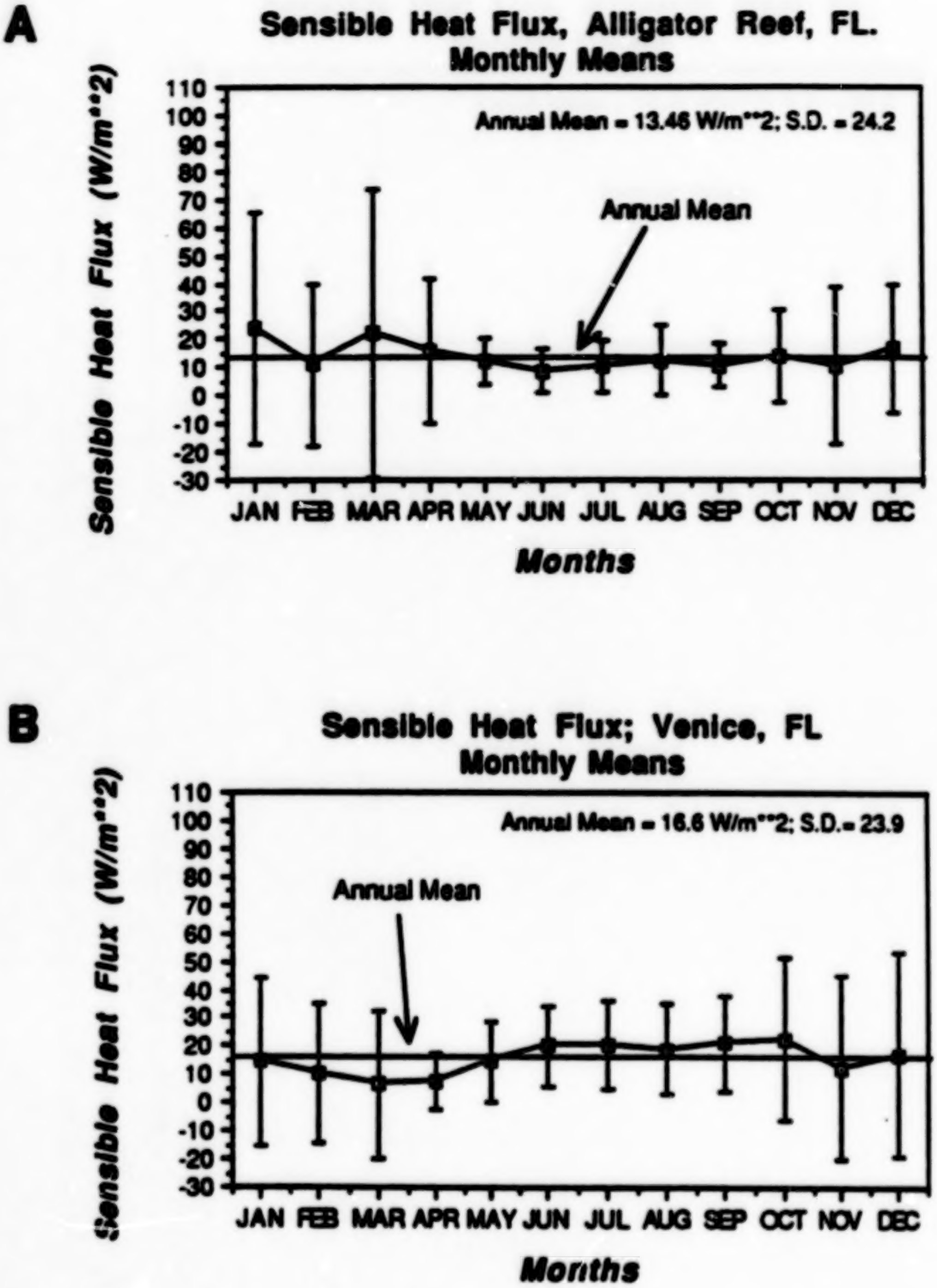


Figure 2.4.3-2a-b Monthly mean sensible heat flux (positive is vertically upwards or flux directed from water to air) with standard deviations and annual mean for NDBC CMAN stations (a) Alligator Reef, Florida and (b) Venice, Florida.

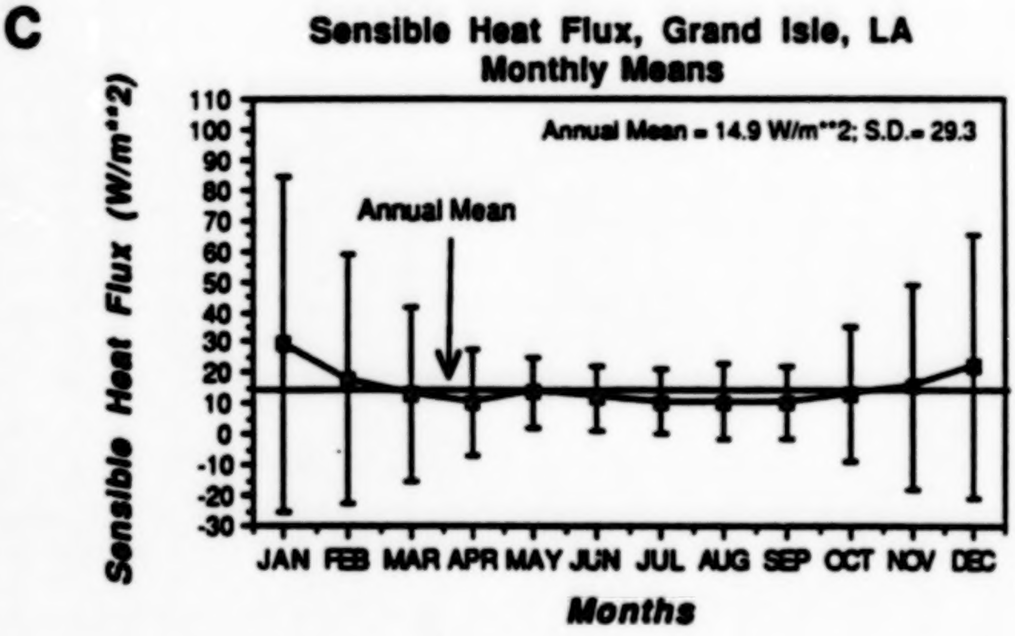


Figure 2.4.3-2c Monthly mean sensible heat flux (positive is vertically upwards or flux directed from water to air) with standard deviations and annual mean for NDBC CMAN station (c) Grand Isle, Louisiana.

monthly means for May through October. Table 2.4.3-1 shows these values and the transition months of April and November for each of the buoys and the CMAN stations.

The winter values of sensible heat flux show a pattern with a minimum in the central Gulf (42001) and higher values to the east (42003) and west (42002). Center-west differences is 9.8 Wm^{-2} and center-east is 8.18 Wm^{-2}. Values at 42007 and 42008 are consistent with this pattern, but should also be viewed with some caution since the records are short and do not overlap. Winter values from the CMAN stations at Alligator Reef and Grand Isle are consistent with the pattern at the deep water buoys in that the eastern station at Alligator Reef has a higher mean than the central station at Grand Isle. Mean values at buoy 42008 and at the Grand Isle and Alligator Reef CMAN station are about (~21 Wm^{-2}) 66% of the median (~31 Wm^{-2}) of the value at 42001, 42002, 42003, and 42007. Based on the tabular monthly data, the winter time variability is higher than the summer or transition months.

Summertime mean sensible heat flux tends to be low, as the atmosphere and ocean are both warm and winds are light. Table 2.4.3-1 shows a pattern of east-west differences similar to that of winter, wherein the minimum value is found in the central Gulf (42001), the highest in the west (42002) and a lesser peak in the east (42003). The center-west difference is 8 Wm^{-2}, while the center-east difference is 2.2 Wm^{-2}. Buoy 42007 is consistent with the pattern but 42008 is not. The caveat about 42007 and 42008 previously mentioned for the winter season applies here. Summertime values at the CMAN stations at Grand Isle and Alligator Reef conform to the pattern noted above. Stations close to land, except 42007, have higher mean values than the deep water buoys.

The transition periods of April and November show some variation in the winter and summer patterns of east-west variability at 42001, 42002 and 42003. During April the eastern buoy (42003) has the warmest SSTs, while in November the difference between the central and eastern buoys is only 1.32 Wm^{-2}, lower than the summer difference of 2.23 Wm^{-2}. The center-west difference is constant at about 9 Wm^{-2}, except in November when it increases to 16 Wm^{-2}. Values at 42007 and 42008 are consistent with the pattern in both months. However, the November value at 42008 is anomalously low for that month (Figure 2.4.3-1e). Means for November at the CMAN stations are about 50% of the values at the buoys.

2.5 Atmospheric Pressure

Pressure observations around the Gulf of Mexico were compiled from 3 different sources of varying lengths. A 17-year time series of hourly pressure observations was constructed from 9 NWS coastal stations and a 7-year record was compiled from pressure observations at 3 buoys spanning the Gulf along 26°N. Finally, a time series of hourly pressure observations was generated for the 7 NDBC CMAN stations, ranging in length from 1-3 years, depending on the stations' length of operation. Seasonal means for the coastal stations and buoys are presented in Table 2.5-1, while the CMAN data is contained in Table 2.5-2. Figures 2.5-1a-i, 2.5-2a-c and 2.5-3a-g represent the monthly mean atmospheric pressure (mb) for the NWS coastal stations, NDBC buoys and the NDBC CMAN locations, respectively. Each figure contains error bars indicating the standard deviation from the monthly mean for that particular month and the annual mean pressure for the duration of each record.

Table 2.4.3-1 Seasonal means of sensible heat flux, Q_S, (W_m^{-2}) for each of 5 NDBC buoys: 3 along 26°N, and 2 shelf buoys.

Buoy	April	Summer	November	Winter
42001	3.15	6.45	22.47	25.93
42002	11.85	14.48	38.98	35.73
42003	13.95	8.68	23.79	34.11
42007	4.19	6.84	25.41	27.80
42008	4.93	11.07	1.44	19.19
ALR	15.61	11.33	10.49	22.34
GDI	10.16	11.51	15.32	20.70
VEN	7.58	19.47	12.32	11.98

Table 2.5-1 Seasonal means of atmospheric pressure minus 1000.0 (mb) for each of the 9 NWS coastal stations and 3 NDBC buoys located across 26°N which were analyzed in this study.

Sta	April	May-Oct. Summer	November	Dec.-Mar. Winter
42001	15.57	15.73	17.51	18.05
42002	14.91	15.08	17.24	18.07
42003	16.09	16.13	17.26	18.31
KW	16.79	15.85	16.92	18.41
FM	17.26	16.36	17.95	19.06
TA	17.53	16.67	18.58	19.42
PE	16.98	16.51	19.23	19.46
MO	16.42	16.12	18.90	19.08
BO	16.31	16.03	19.07	19.45
PA	15.52	15.84	18.96	19.16
CC	13.37	14.27	17.80	18.03
BV	12.91	13.85	17.29	18.94

Table 2.5-2 Seasonal means of atmospheric pressure minus 1000.0 (mb) for each of the 7 NDBC CMAN stations analyzed. Note these records have maximum lengths of 1-3 years.

STA	April	May-Oct. Summer	November	Dec.-Mar. Winter
ALRF1[2]	16.65	17.03	16.97	17.86
VENF1[1]	15.71	17.01	17.52	17.27
CSBF1[3]	16.82	16.95	18.79	19.15
BURL1[3]	17.09	16.37	18.02	19.46
GDIL1[3]	17.60	16.53	17.85	19.30
SRST2[3]	17.38	15.86	18.12	19.23
PTAT2[3]	15.70	14.79	17.15	18.73

[1] One year record
[2] Two year record
[3] Three year record

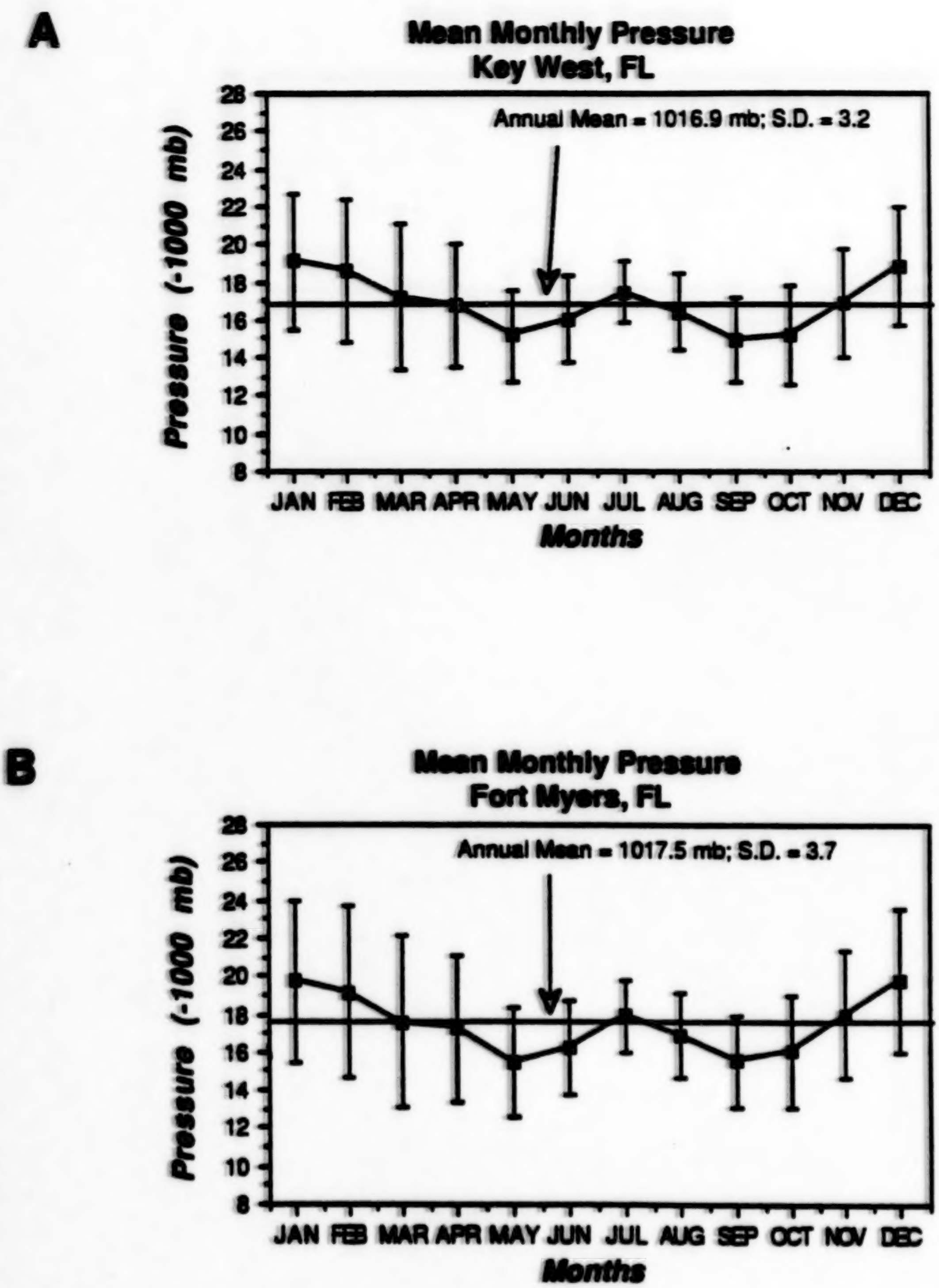
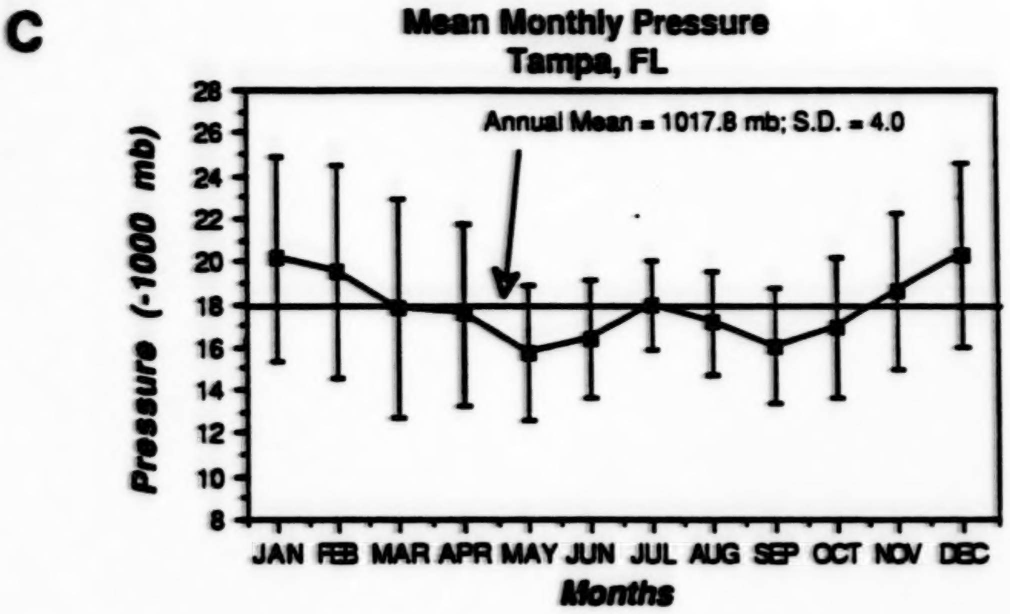


Figure 2.5-1a-b Monthly mean atmospheric pressure with standard deviations and annual mean for NWS coastal stations (a) Key West, Florida and (b) Fort Myers, Florida.



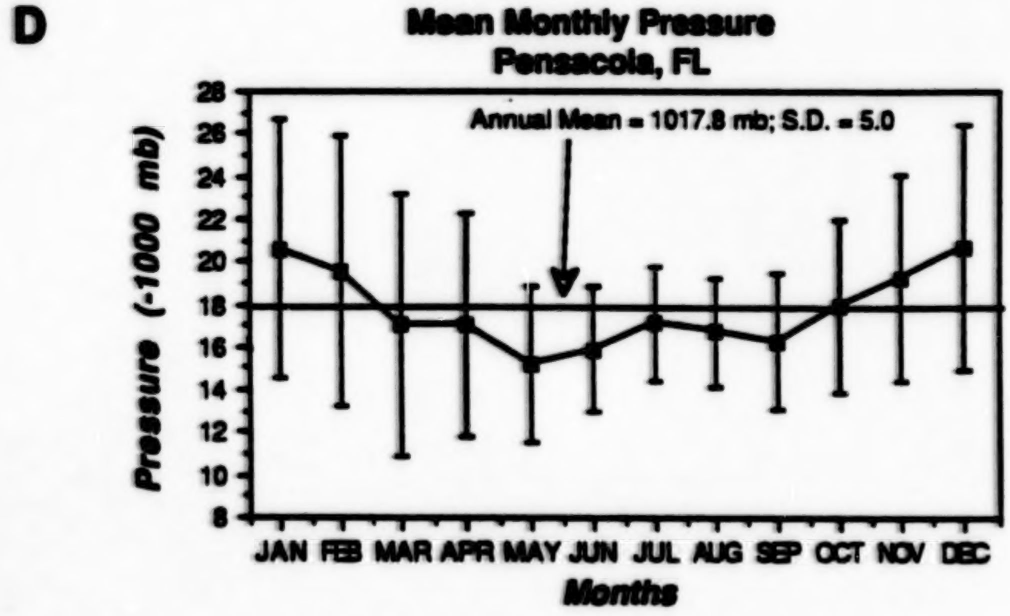


Figure 2.5-1c-d Monthly mean atmospheric pressure with standard deviations and annual mean for NWS coastal stations (c) Tampa, Florida and (d) Pensacola, Florida.

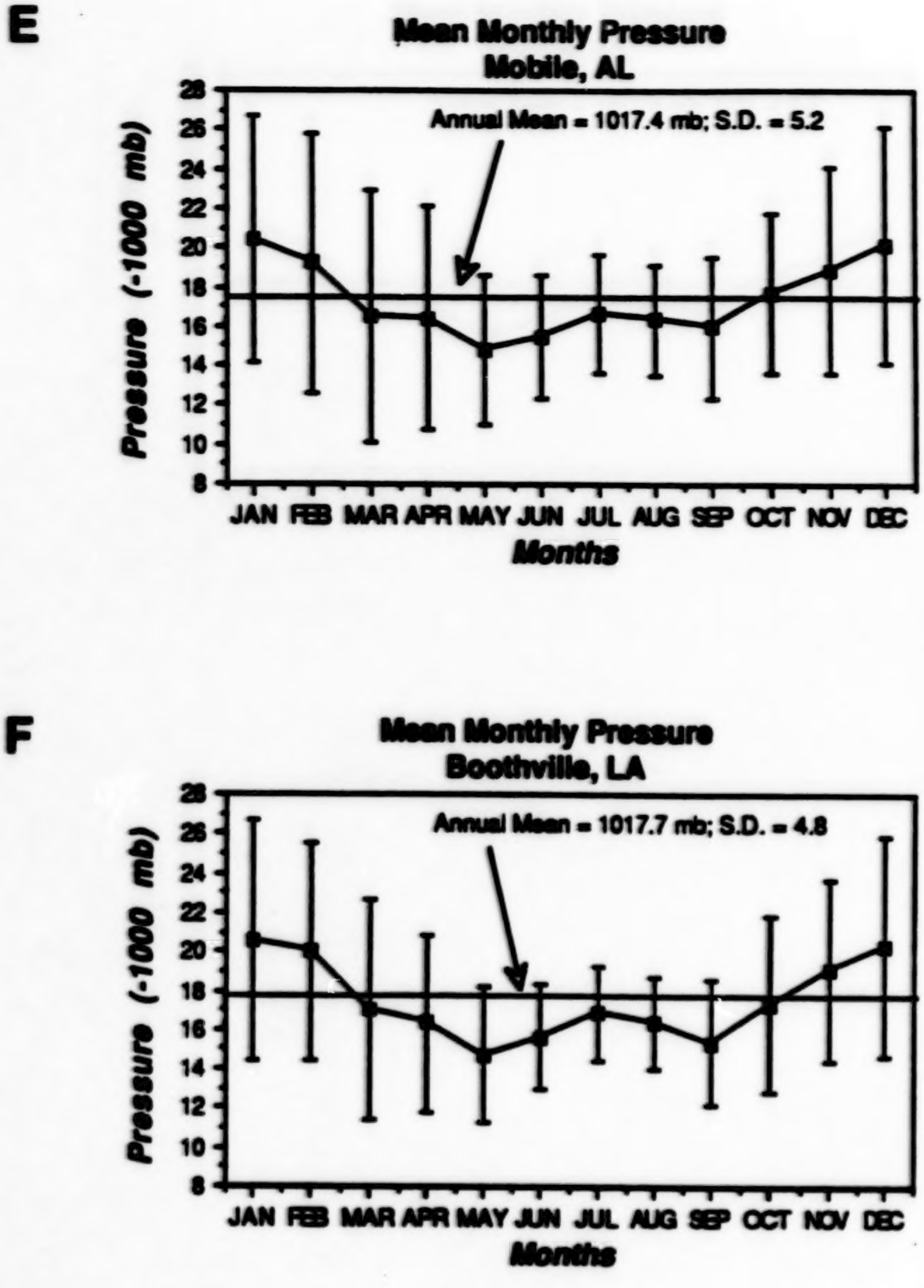
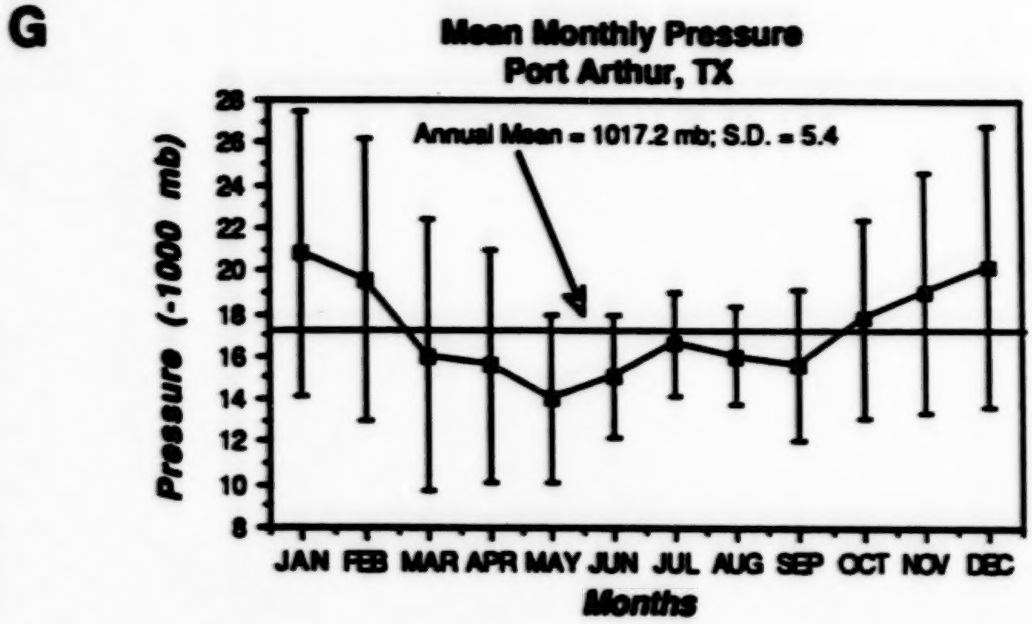


Figure 2.5-1e-f Monthly mean atmospheric pressure with standard deviations and annual mean for NWS coastal stations (e) Mobile, Alabama and (f) Boothville, Louisiana.



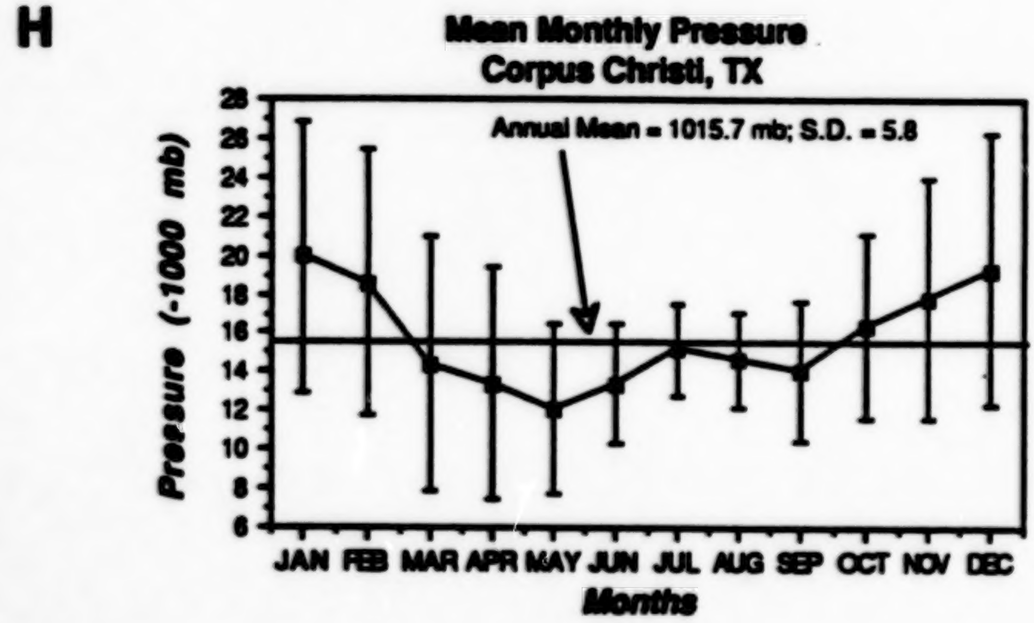


Figure 2.5-1g-h Monthly mean atmospheric pressure with standard deviations and annual mean for NWS coastal stations (g) Port Arthur, Texas and (h) Corpus Christi, Texas.

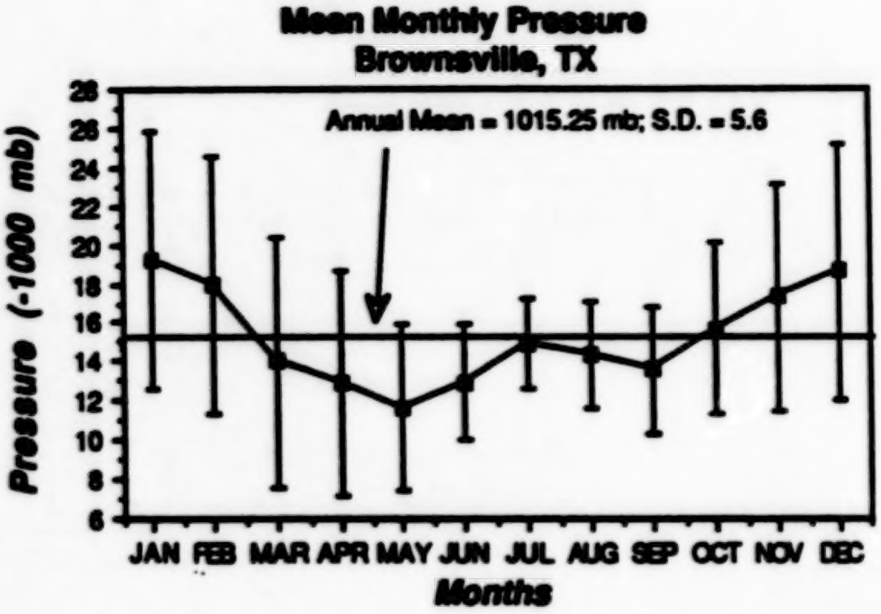


Figure 2.5-1i Monthly mean atmospheric pressure with standard deviations and annual mean for NWS coastal station (i) Brownsville, Texas.

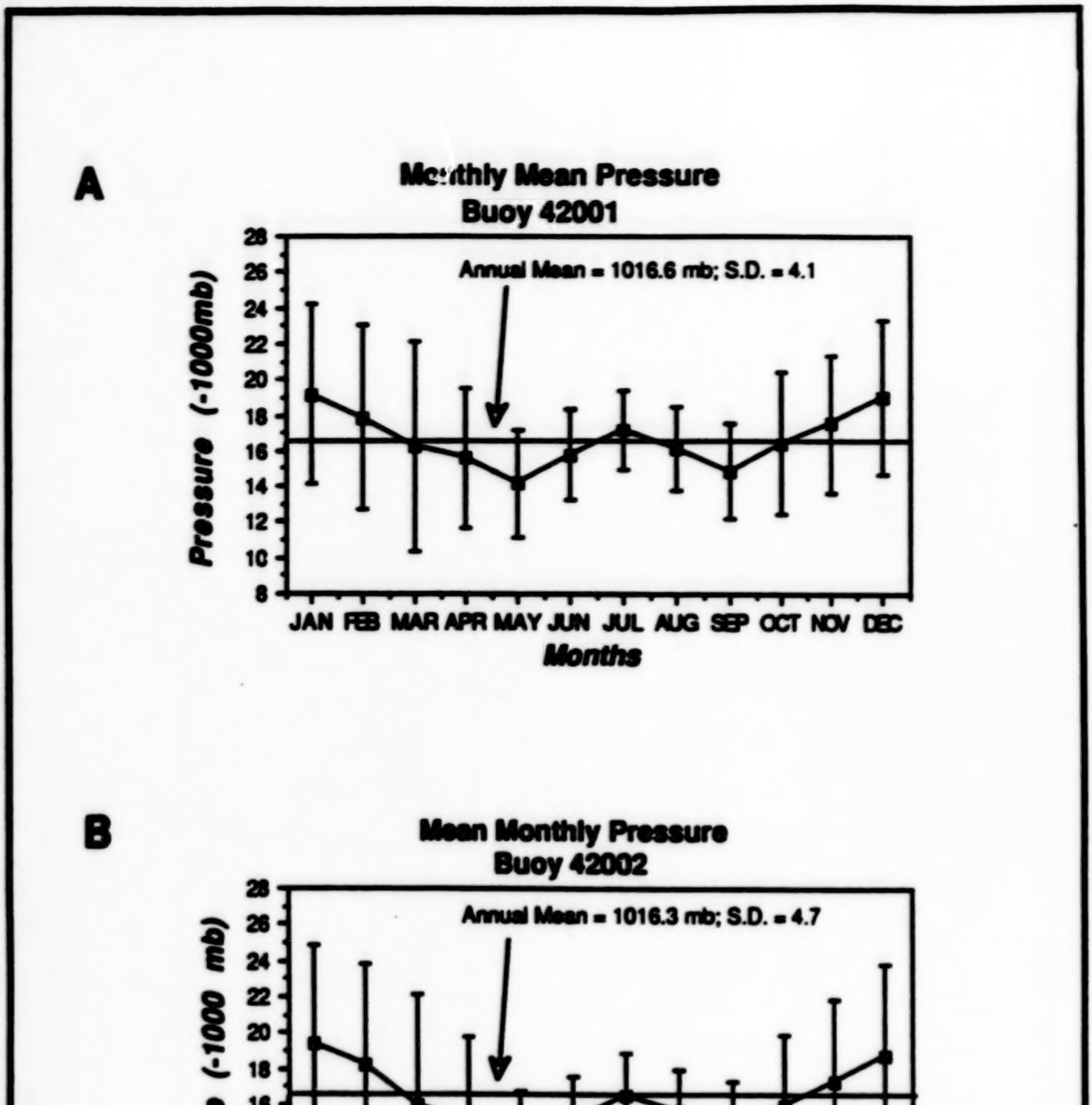


Figure 2.5-2a-b Monthly mean atmospheric pressure with standard deviations and annual mean for NDBC buoys (a) 42001 and (b) 42002.

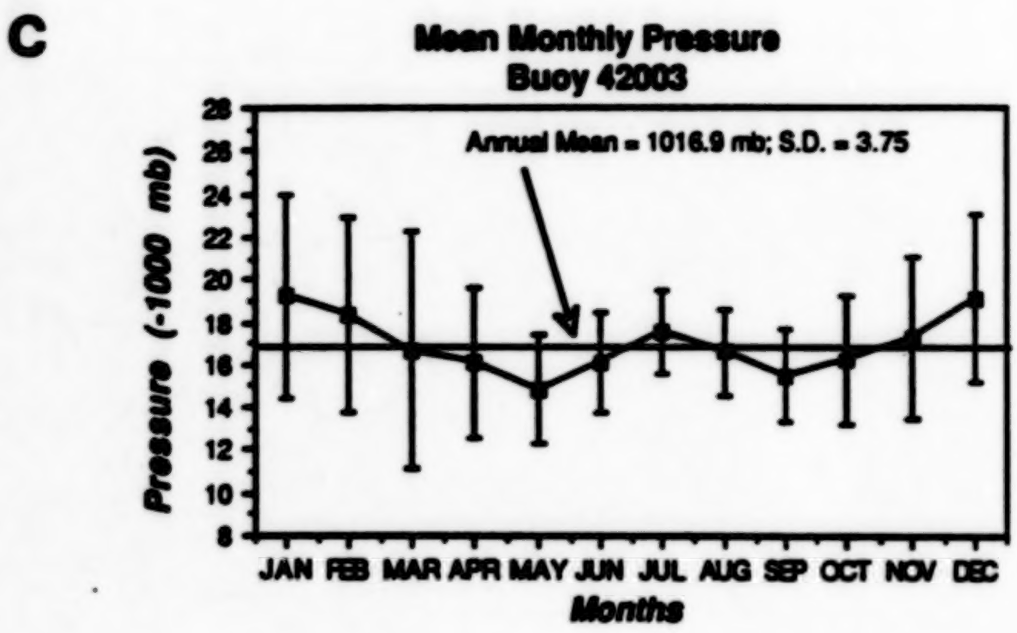


Figure 2.5-2c Monthly mean atmospheric pressure with standard deviations and annual mean for NDBC buoy (c) 42003.

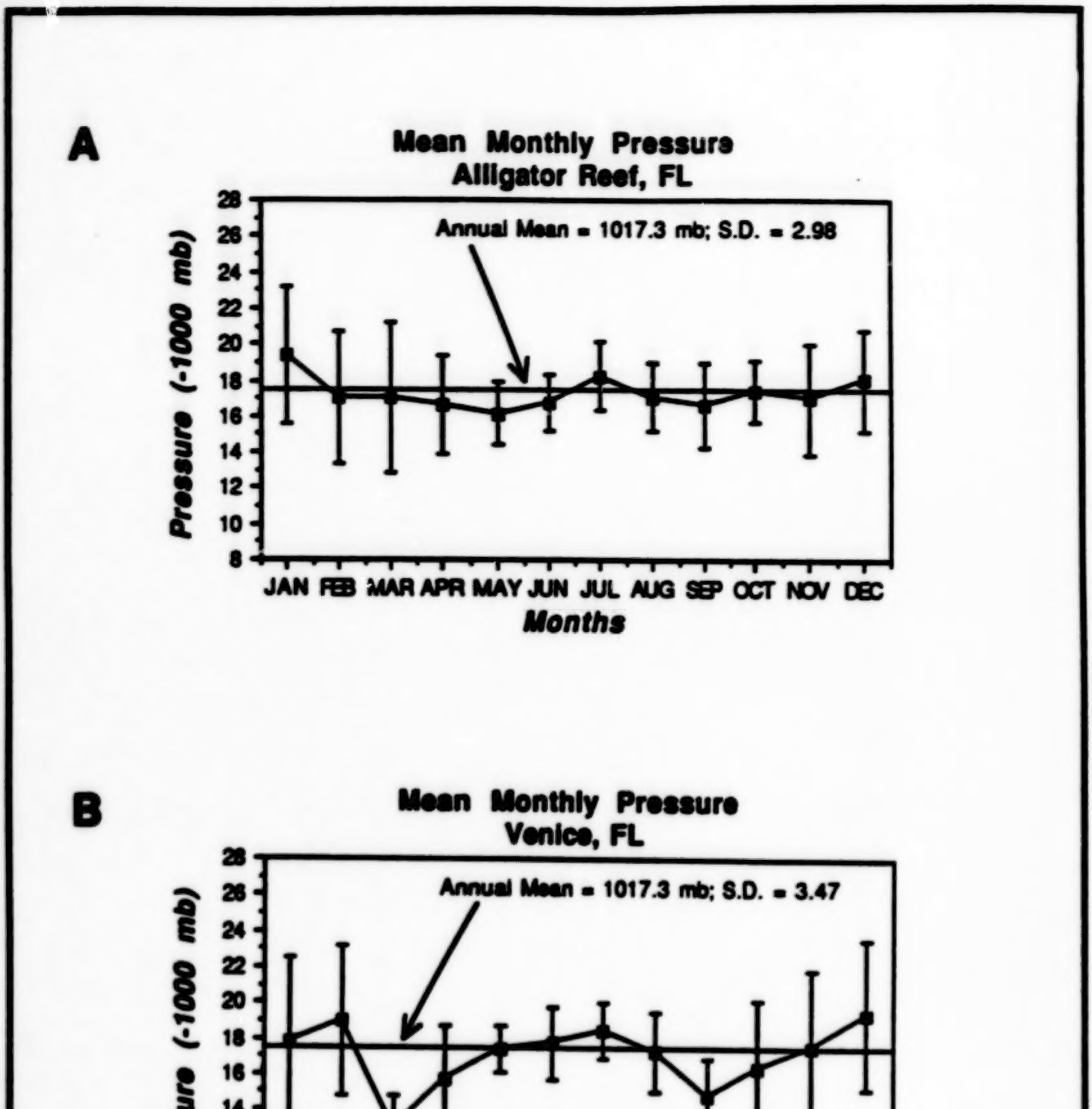


Figure 2.5-3a-b Monthly mean atmospheric pressure with standard deviations and annual mean for NDBC CMAN stations (a) Alligator Reef, Florida and (b) Venice, Florida.

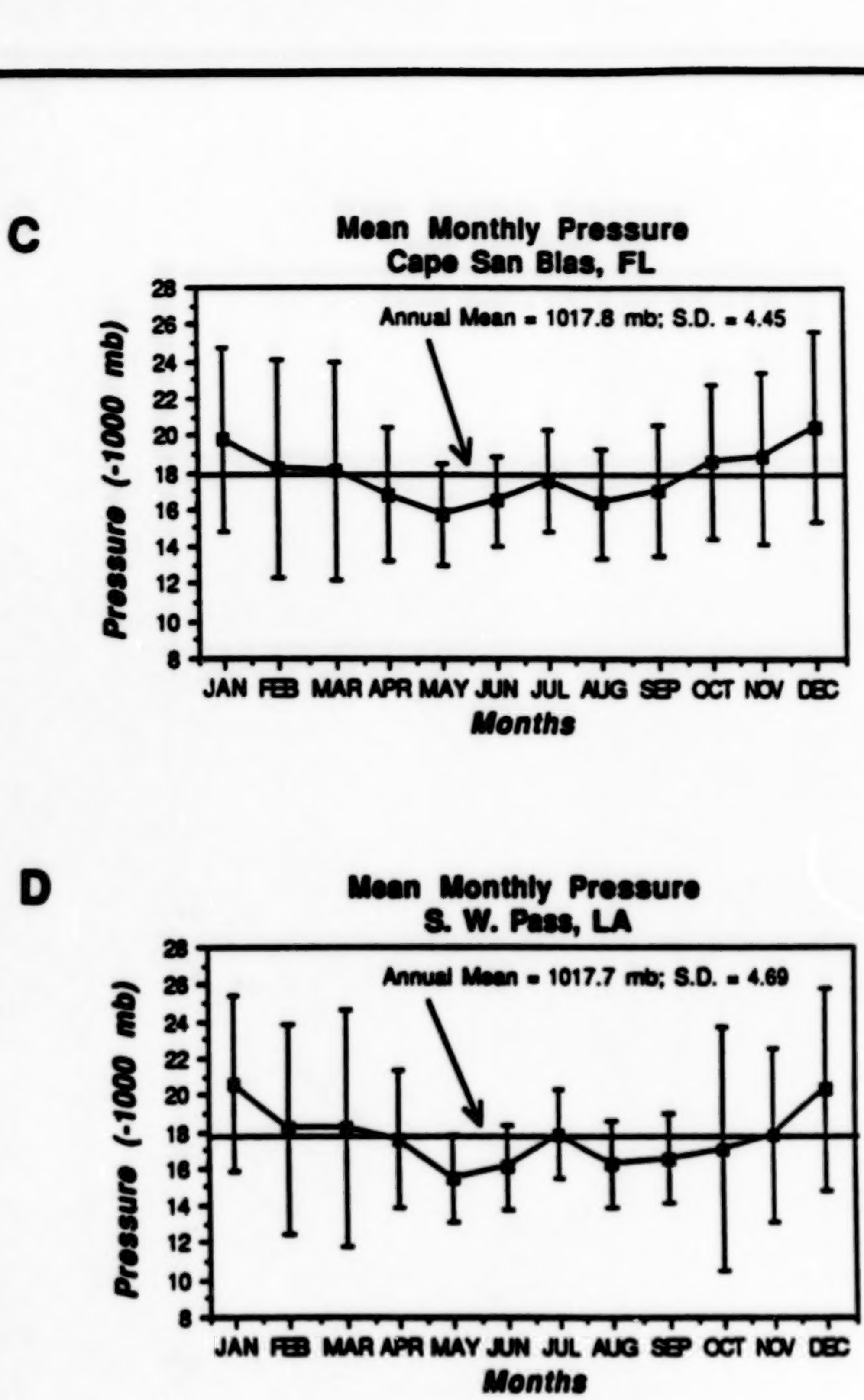


Figure 2.5-3c-d Monthly mean atmospheric pressure with standard deviations and annual mean for NDBC CMAN stations (c) Cape San Blas, Florida and (d) Southwest Pass, Louisiana.

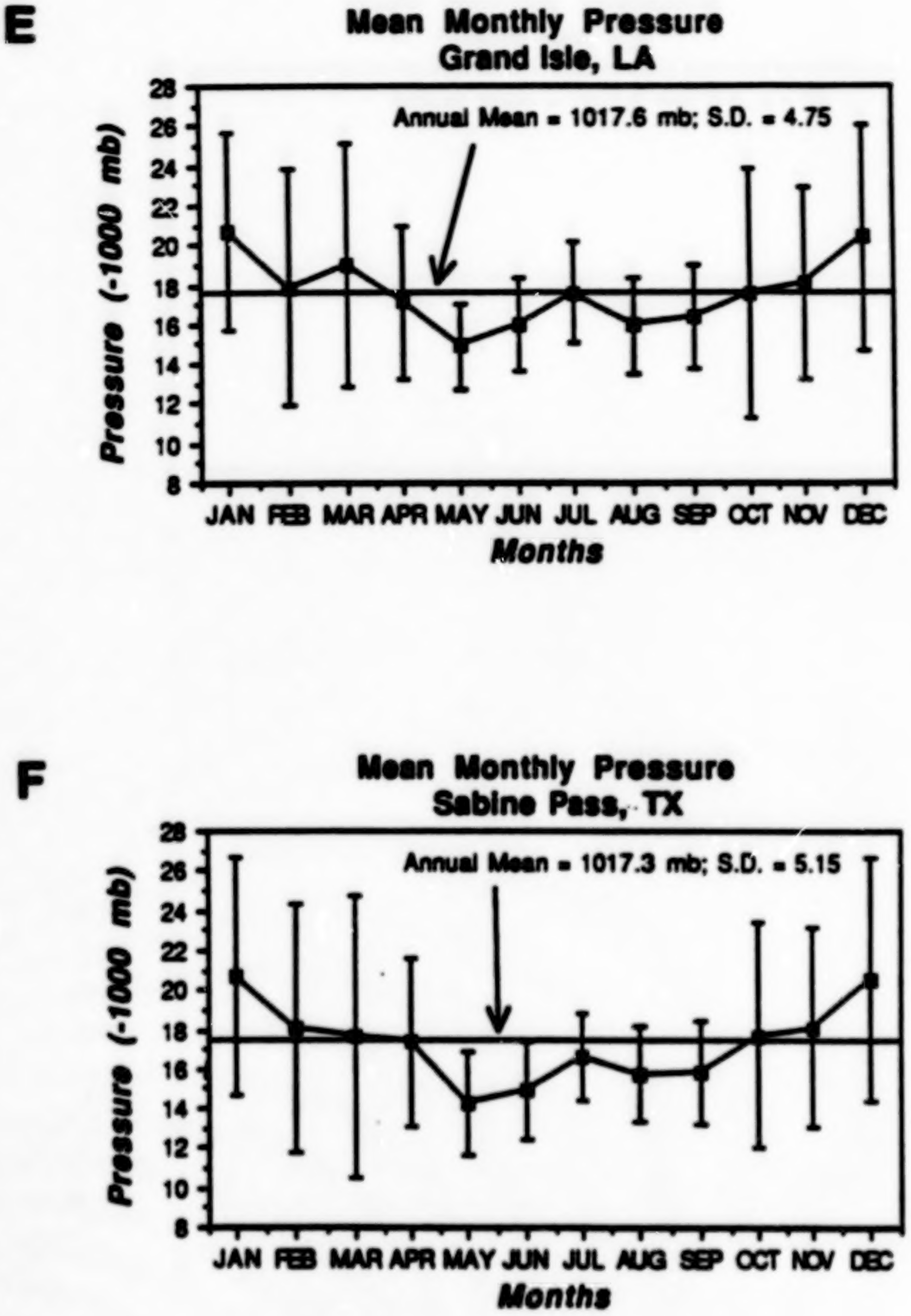


Figure 2.5-3e-f Monthly mean atmospheric pressure with standard deviations and annual mean for NDBC CMAN stations (e) Grand Isle, Louisiana and (f) Sabine Pass, Texas.

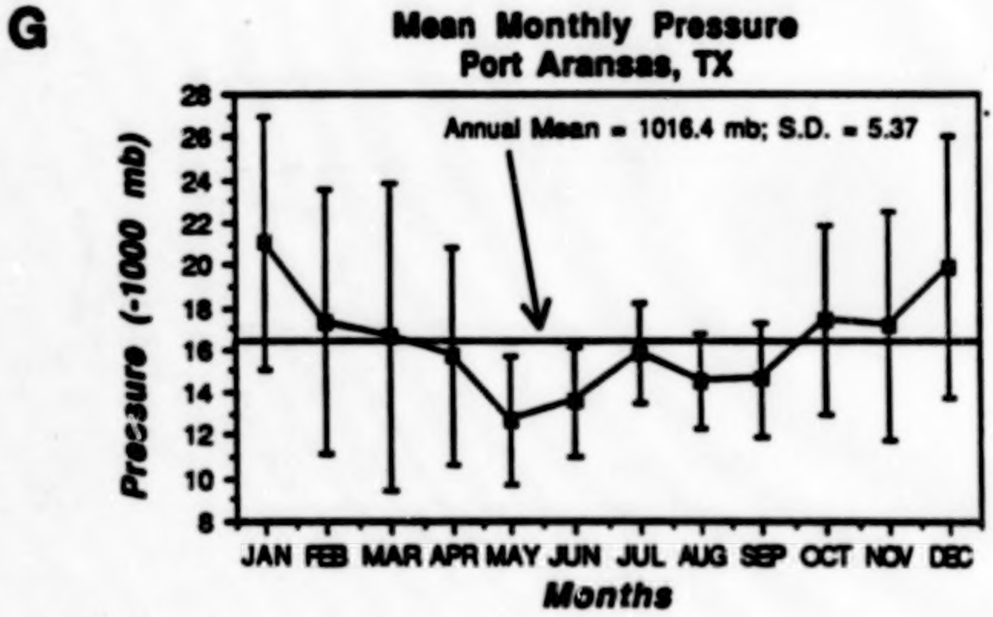


Figure 2.5-3g Monthly mean atmospheric pressure with standard deviations and annual mean for NDBC CMAN station (g) Port Aransas, Texas.

The annual variations in atmospheric pressure across the Gulf of Mexico are similar at all 17 stations analyzed. However, as was discussed with air temperature, this does not imply that significant variations do not occur from year to year. These variations are best recognized by utilizing the monthly/annual statistical summaries provided in Appendix C (Sections C.1.1, C.2.1 and C.3.2). The annual cycle shows a peak during winter, a decline to a minimum in May, a mid-summer peak in July, followed by a decline into September, which is trailed by a smooth increase into the winter months. This scenario is extremely uniform across the entire Gulf region for all stations considered.

The winter season is characterized by a maxima in the pressure field at all stations. When considering only the coastal stations and the buoys, the winter pressure field has a range of approximately 1.4 mb, generally increasing toward the north. A similar trend is observed in the CMAN data; however, the records at ALRF1 (2 year duration) and VENF1 (1 year duration) show somewhat lower annual mean pressures, resulting in ranges of near 1.5 and 2.2 mb, respectively. Again, these latter 2 records are of very short duration and do not represent climatologically stable statistics. The east-west pressure variation is negligible in all 3 data sets. Corpus Christi has almost 1 mb lower mean pressure than the station to its north (Port Arthur) and south (Brownsville). A similar difference (0.5 mb) can be seen in the mean values between Port Aransas and Sabine Pass.

The summer season is characterized by a much higher degree of variability in the mean pressure field. The pressure range in summer is 2.82 mb between Brownsville and Tampa, with higher pressure towards the north and east. The annual range is less in the eastern Gulf as opposed to the western Gulf. The mean summer pressure value is misleading, in that it masks the distinct summer pattern noted earlier of a minimum in May, a mid-season maximum in July and a late season minimum in September. It is important to note that all 17 stations exhibited this distinct pattern (Figures 2.5-1a-i, 2.5-2a-c and 2.5-3a-g).

The range of monthly mean pressures during the spring (April) transition period was greater than during the fall (November). The difference between Brownsville and Tampa was 4.62 mb, with pressure increasing towards the east during spring. This trend was not as observable in the CMAN stations, as ALRF1 and VENF1 were once again anomalously low during the transition periods. The spring pressure maximum was along the west Florida coast near Tampa/Fort Meyers. However, this finding was not supported by the CMAN station at Venice, possibly due to its short-term record (1-year duration). The pressure difference between Key West and Pensacola during fall was 2.31 mb, with this difference increasing toward the north. During fall, east-west differences across the Gulf were on the order of 2 mb, with the highest pressure along the northern coast of the Gulf from Tampa around to Port Arthur.

2.6 Mean Wind and Wind Stress Climatology

Since wind stress is a forcing mechanism for coastal and deep ocean circulations and since it is also useful to compare mean wind stress fields with mean wind fields, wind stress was calculated from the wind records using the formulation drag coefficient from Large and Pond (1981). Wind stress is calculated from:

$$\underline{\tau} = c\rho_a|\underline{W}|\underline{W}$$

where $\underline{\tau}$ is the wind stress (in dynes cm^{-2}), ρ_a is air density, $\underline{W}$ is the wind vector and C the drag coefficient is given by

$$c = \begin{cases} 0.0012 & \underline{W} < 11 \text{ m/s} \\ 0.00049 + 0.000065(\underline{W}) & \underline{W} > 11 \text{ m/s} \end{cases}$$

The northern Gulf of Mexico annual cycle may be divided into two seasons, winter and summer, connected by short transitions of about a month. The winter period, December through March, is characterized by frequent storms producing strong, rapidly changing winds, large atmospheric pressure and temperature fluctuations due to cyclones moving eastward across the Gulf. The northern Gulf shelf water is a region of cyclogenesis during cold air outbreaks.

Summer months are characterized by generally low wind conditions with small pressure fluctuations as weather becomes dominated by the western side of the Bermuda High. There are generally large diurnal changes in air temperature at coastal stations, along with associated sea breeze systems. The summer season, May through October, may be interrupted by a small number of tropical storms or hurricanes, originating in Gulf waters or moving in from the tropical Atlantic. Transitions between seasons occur quite rapidly and a distinct spring and fall is not characteristic of these latitudes. There is some interannual variability in the start and ending of the seasons. Thus, April and November are sometimes more characteristic of one season or the other in different years.

Figures 2.6-1a-c illustrate seasonal differences in coastal station data for three representative stations--Tampa, Mobile and Corpus Christi. Marked changes in seasonal characteristics are seen in these (a) 40-HLP filtered winds, (b) atmospheric pressure (c) hourly air temperatures from 1983. Winter months correspond to Julian days 335-365 and 0-90, the summer months to days 120-300, respectively. Note the difference in character of summer 40-HLP winds between east (Tampa and Mobile) and west (Corpus Christi). Relatively strong summer winds at Corpus Christi are consistently southeasterly and are related to seasonal circulation around the Bermuda High. Interannual variability of seasons can be illustrated by reference to the monthly means and variances for the pressure given in Appendix C (Sections C.1.1, C.2.1 and C.3.2). Winter months are characterized by high variances and the summer low, except for the occasional large values occurring due to hurricanes or tropical storms.

Winter season mean winds averaged over years for the NWS coastal stations, NDBC buoys and NDBC CMAN stations are shown as vectors on the Gulf of Mexico map (Figure 2.6-2a). The coastal stations contain data from 17 years. The 3 NDBC buoys along 26°N use about 10-year records and the shelf buoys and platforms use

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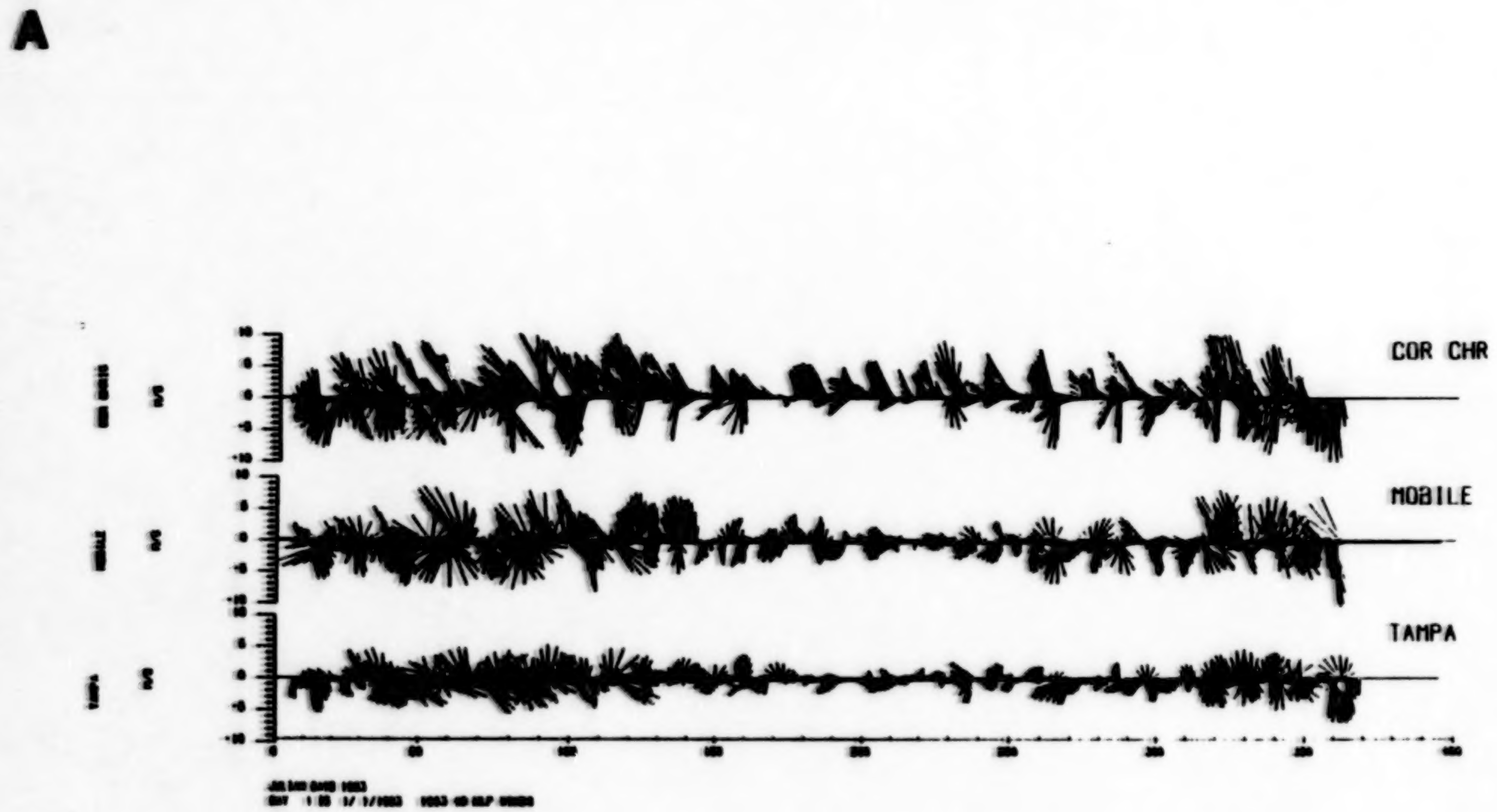

Figure 2.6-1a 1983 40-HLP winds from Tampa, Mobile, and Corpus Christi NWS stations. Sticks are vectors with north vertically upwards, directed towards the direction which the wind blows.

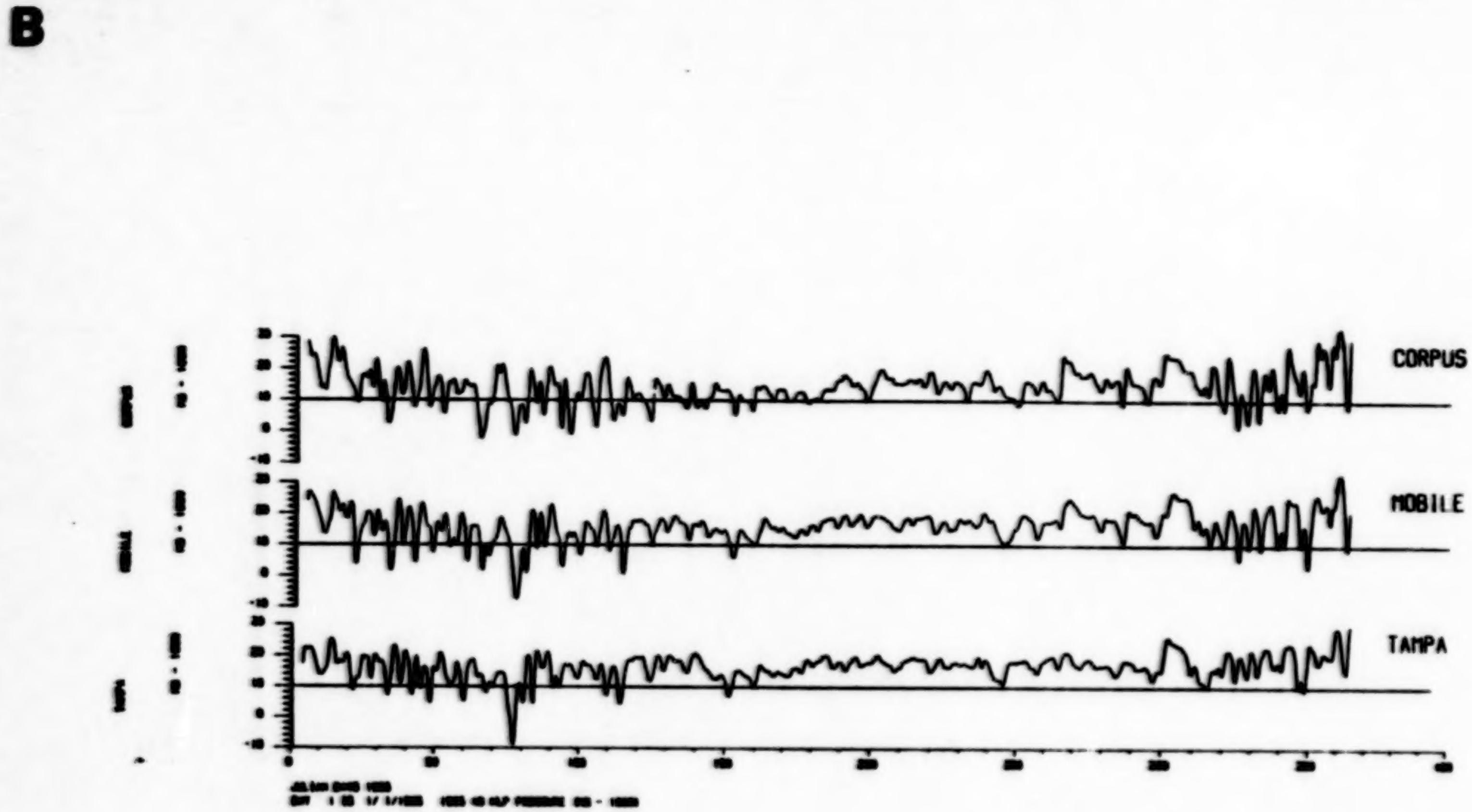

Figure 2.6-1b 1983 40-HLP atmospheric pressure records (mb-1000) from stations Tampa, Mobile, and Corpus Christi.

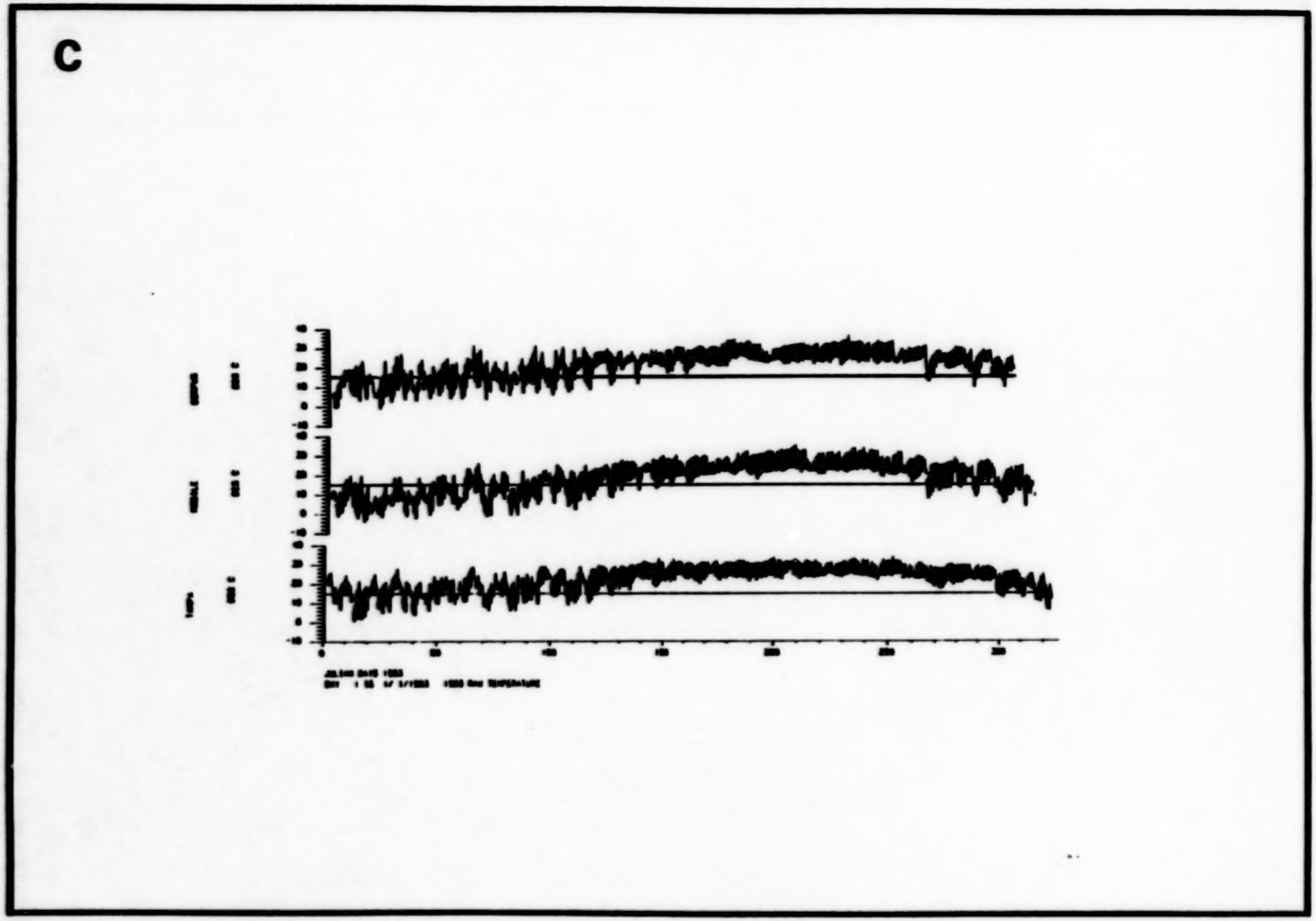

Figure 2.6-1c 1983 one hour air temperature records from stations Tampa, Mobile, and Corpus Christi.

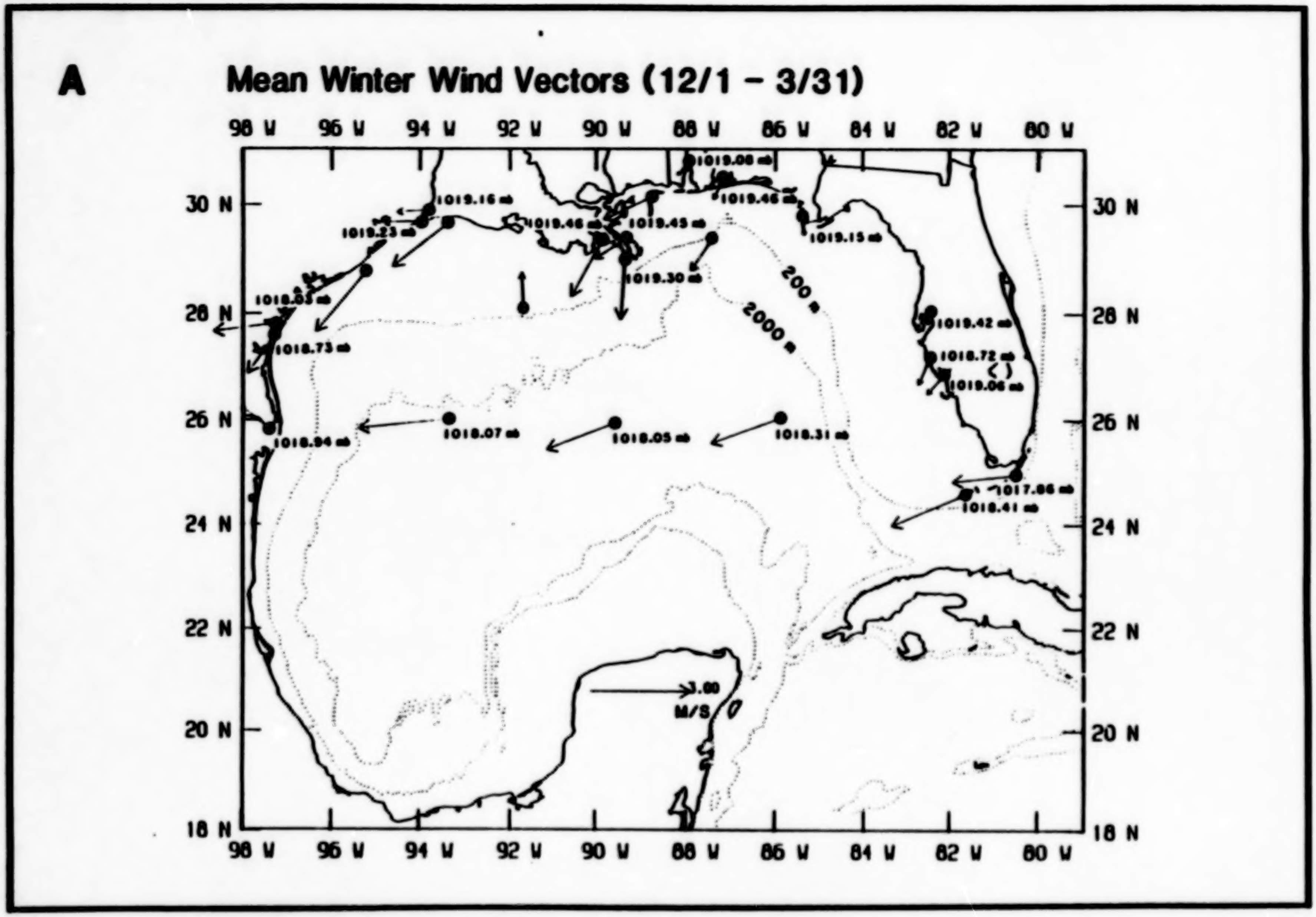

Figure 2.6-2a Winter mean seasonal wind maps of vectors from buoys, CMAN and coastal stations. The station position is at the junction of the tail of the vector and the large dot. Mean atmospheric pressure (mb) is noted next to each station.

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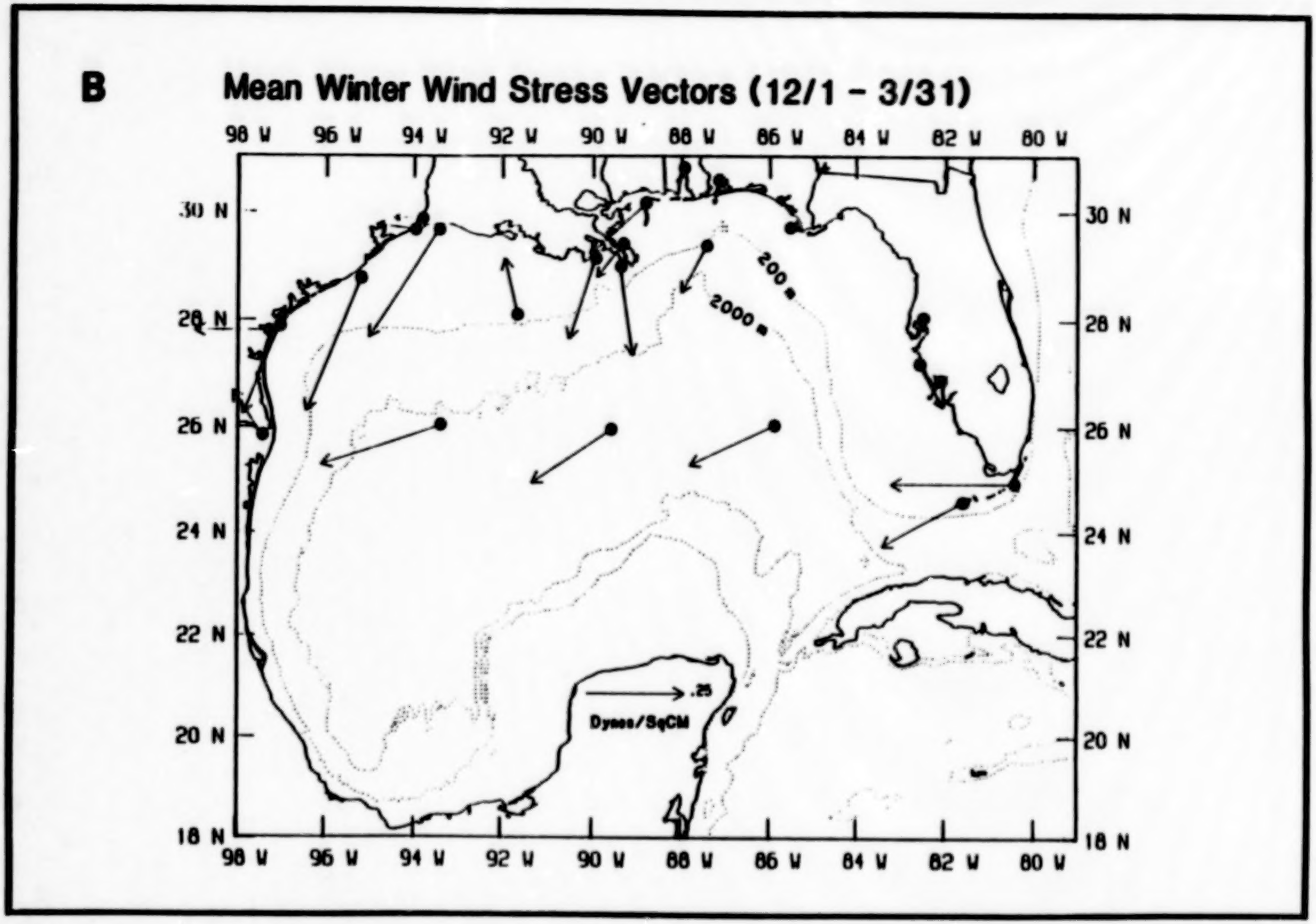

B Mean Winter Wind Stress Vectors (12/1 - 3/31)

Figure 2.6-2b Winter mean seasonal wind stress maps of vectors from buoys, CMAN and coastal stations. The station position is at the junction of the tail of the vector and the large dot.

2- to 3- year records. The 7 NDBC CMAN stations use records varying in length from 1- to 3- years (1-year records: VENF1; 2-year records: ALRF1 and 3-year records: CSBF1, GDIL1, BURL1, PTAT2 and SRST2). The OCMP station (EI331) data record spans a 5-year period. However, the data return was very intermittent and sparse during certain time periods. Also, for reasons not completely understood, the wind data collected at this location is suspect. Possible causes for the contamination of the data set include instrument/data recorder malfunction, transcription errors and frequent helicopter-induced noise. The data is presented here merely as a convenience to readers and to show the locations of available data sets. The percentage of valid data, i.e., disregarding gaps, is given in frequency distribution tables which are located in Appendix D (Section D.1). Equivalent mean wind stress vectors are shown in Figure 2.6-2b. Patterns are similar except for a greater difference in strength between land and water and from east to west in the wind stress than in the mean wind vectors. An interesting feature is delineated along the Texas shelf/coast where the mainland stations are primarily easterly, while the coastal/shelf stations (CMAN and buoy locations) are predominantly northeasterly or alongshelf. Most of the wind stress vectors are rotated about 5°-15°counterclockwise from the mean wind vectors. These differences are due to the quadratic, and thus, nonlinear relation between wind and wind stress. The relatively large rotation of Texas shelf wind stress compared to the wind vectors, therefore, is due to the influence of strong northerlies during cold air outbreaks.

Mean winter winds have a dominant easterly component that strengthens towards the west. Fort Meyers, Tampa, Pensacola, Cape San Blas and Venice mean wind vectors have small magnitudes, < 1 ms^{-1}, and are directed offshore. Boothville, Port Arthur, Corpus Christi, Sabine Pass and Brownsville, in contrast, have substantial mean easterly winds. Shelf mean winds tend to parallel the trend of the Louisiana and Texas coastlines. Compared with the direction of the 26°N winds, these shelf mean winds imply a convergence of streamlines towards the south Texas coast between Corpus Christi and Brownsville. The relatively strong mean easterly wind at Corpus Christi is consistent with converging flow in this region. Key West and Alligator Reef mean winds are east-northeasterly and are clearly more characteristic of ocean conditions represented by the 26°N buoys than other stations on the west coast of Florida.

Wind roses for the winter season at each station are given in Figure 2.6-3. The west Florida coastal stations show a fairly uniform distribution around the compass, with a slight predominance of winds with an easterly component. Easterlies dominate Key West and the 26°N buoys. The influence of cold air outbreaks on this region is evident in the northern coastal/shelf stations, where strong northerlies are dominant. Moving from the Florida panhandle to southern Texas, easterlies and southeasterlies show higher percentages and have wind speeds similar to northerlies and northwesterlies. Frequency distributions corresponding to the roses are given in Appendix D (Section D.1).

The mean summer wind and wind stress vectors for all stations are shown in Figures 2.6-4a-b. Mean winds are easterly to southeasterly and generally stronger than in winter, except along the northeast coast. The accelerating mean flow across the central and northwestern Gulf is driven by the pressure gradient between the Bermuda High and the southwestern Rockies Low. Wind stress vectors show the same pattern and, unlike the winter, the wind stress vectors are almost exactly parallel to wind vectors indicating that the wind fluctuations are fairly consistent in direction throughout the summer. This consistency of wind

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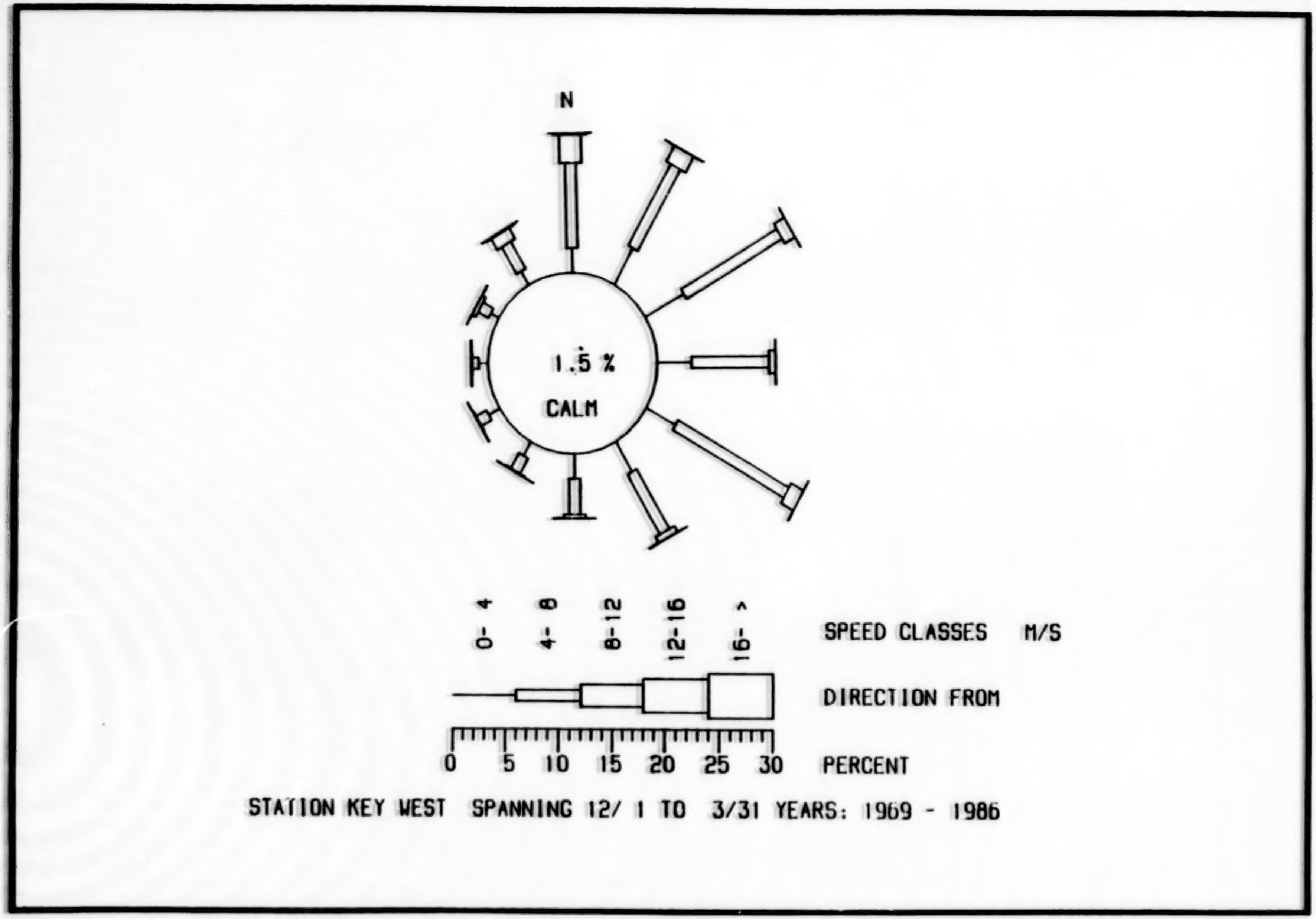


Figure 2.6-3 Winter seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.

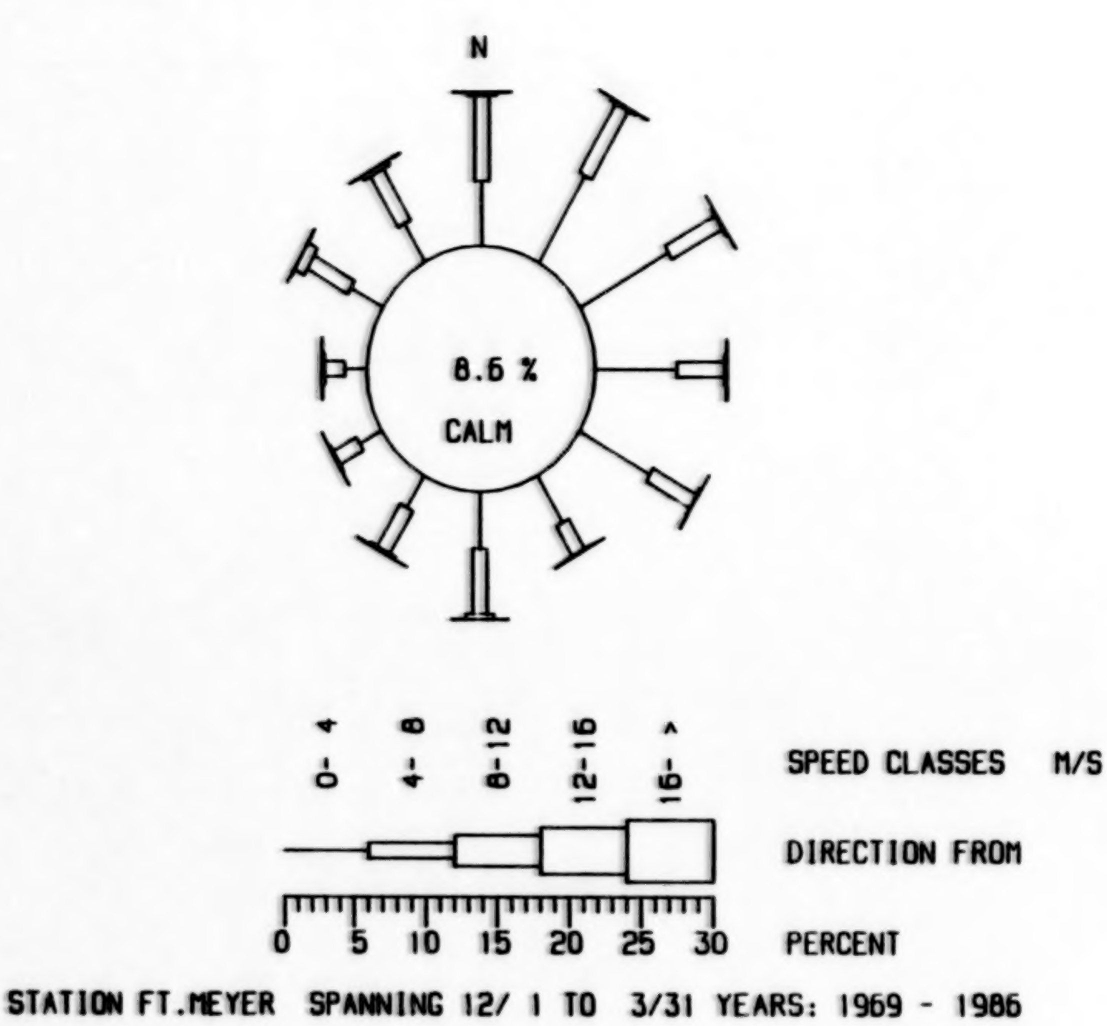
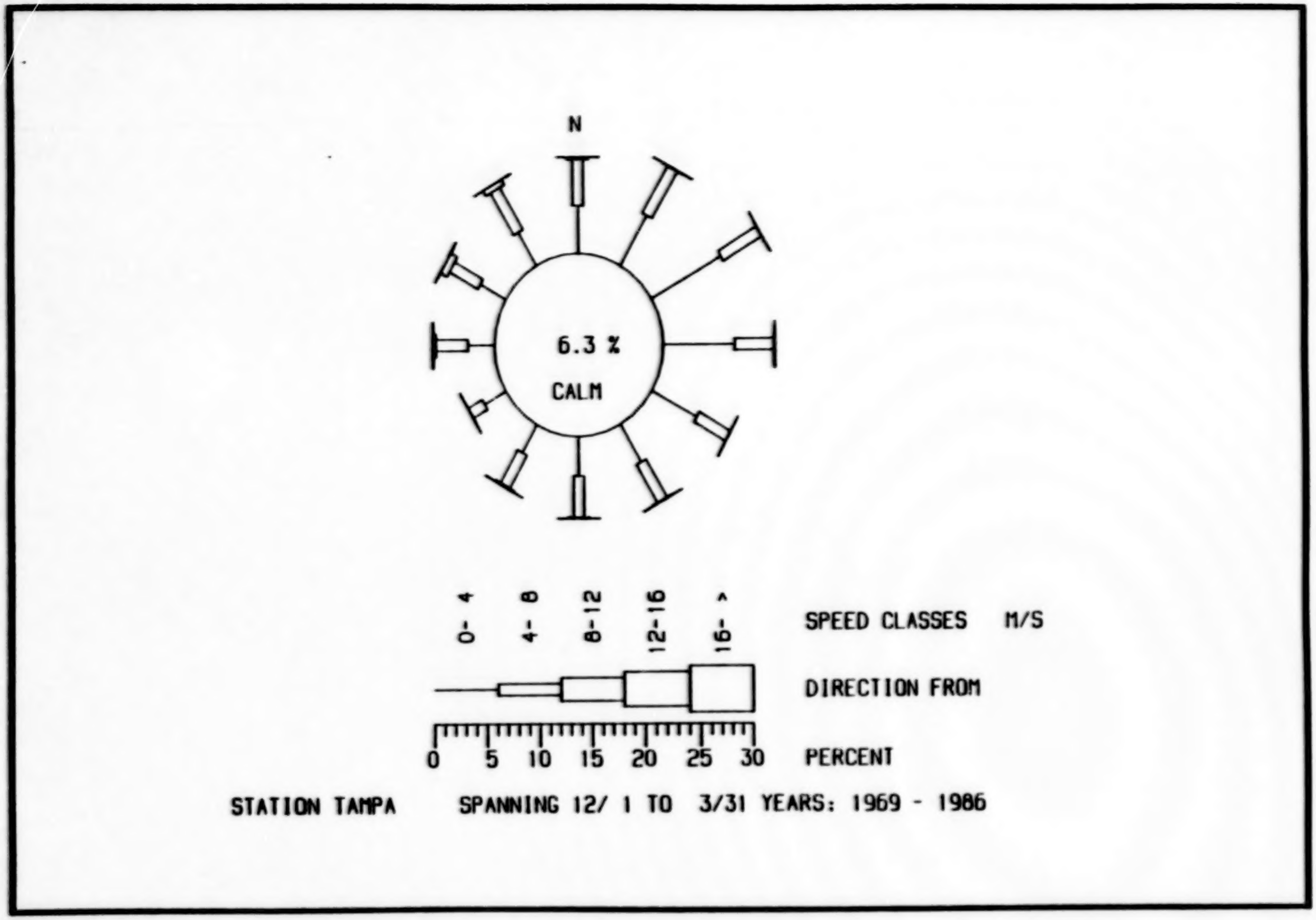


Figure 2.6-3 Winter seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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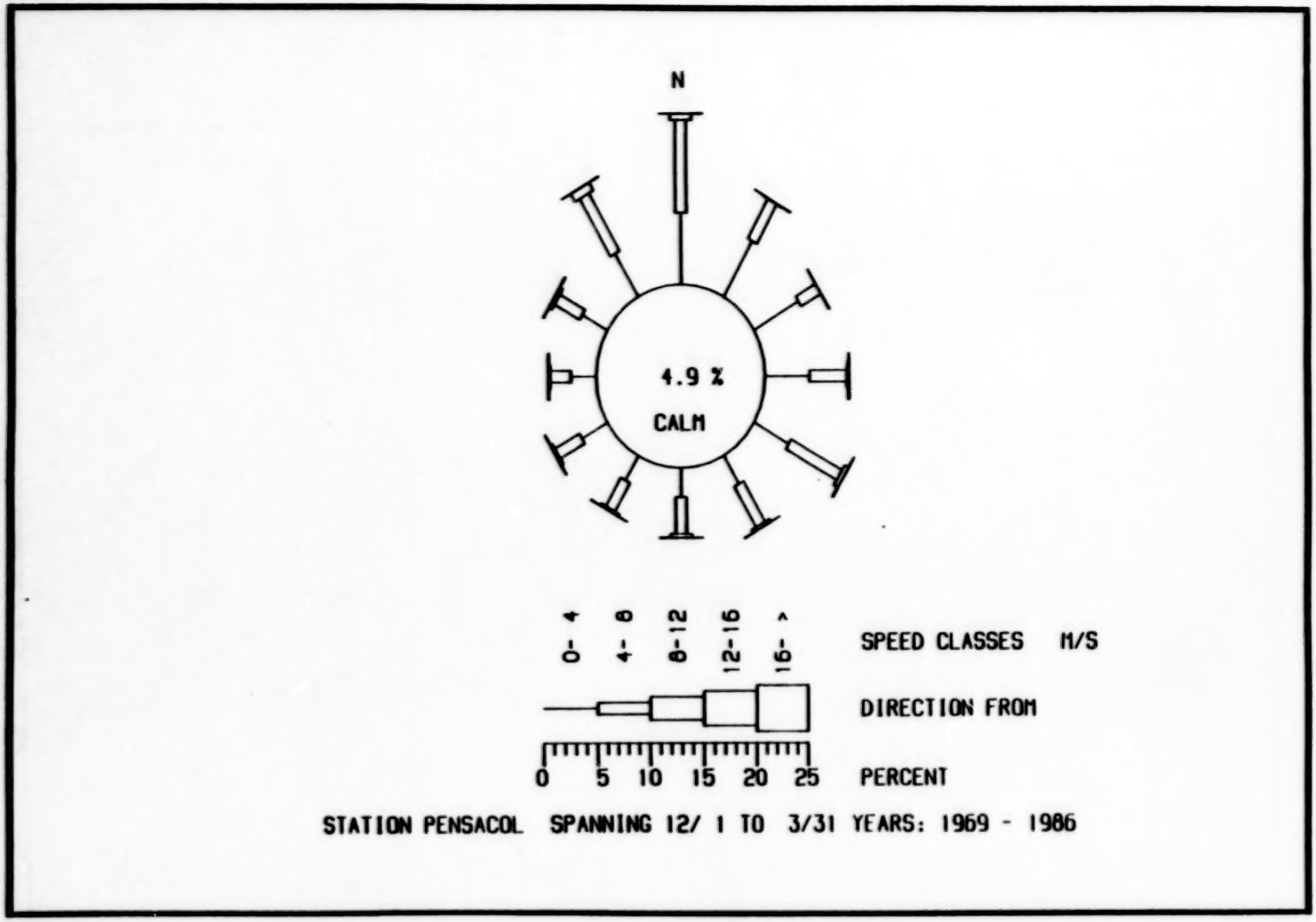

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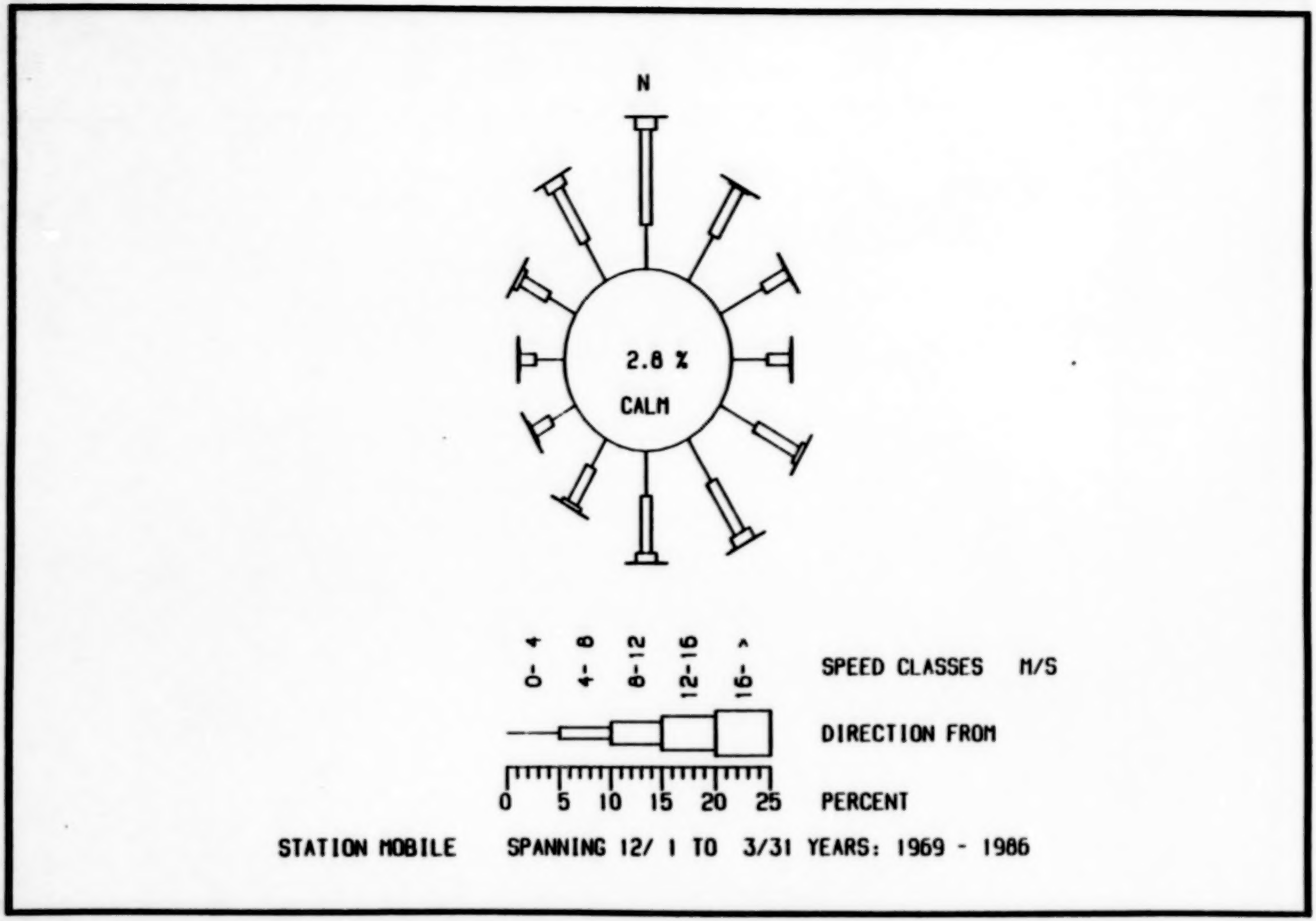

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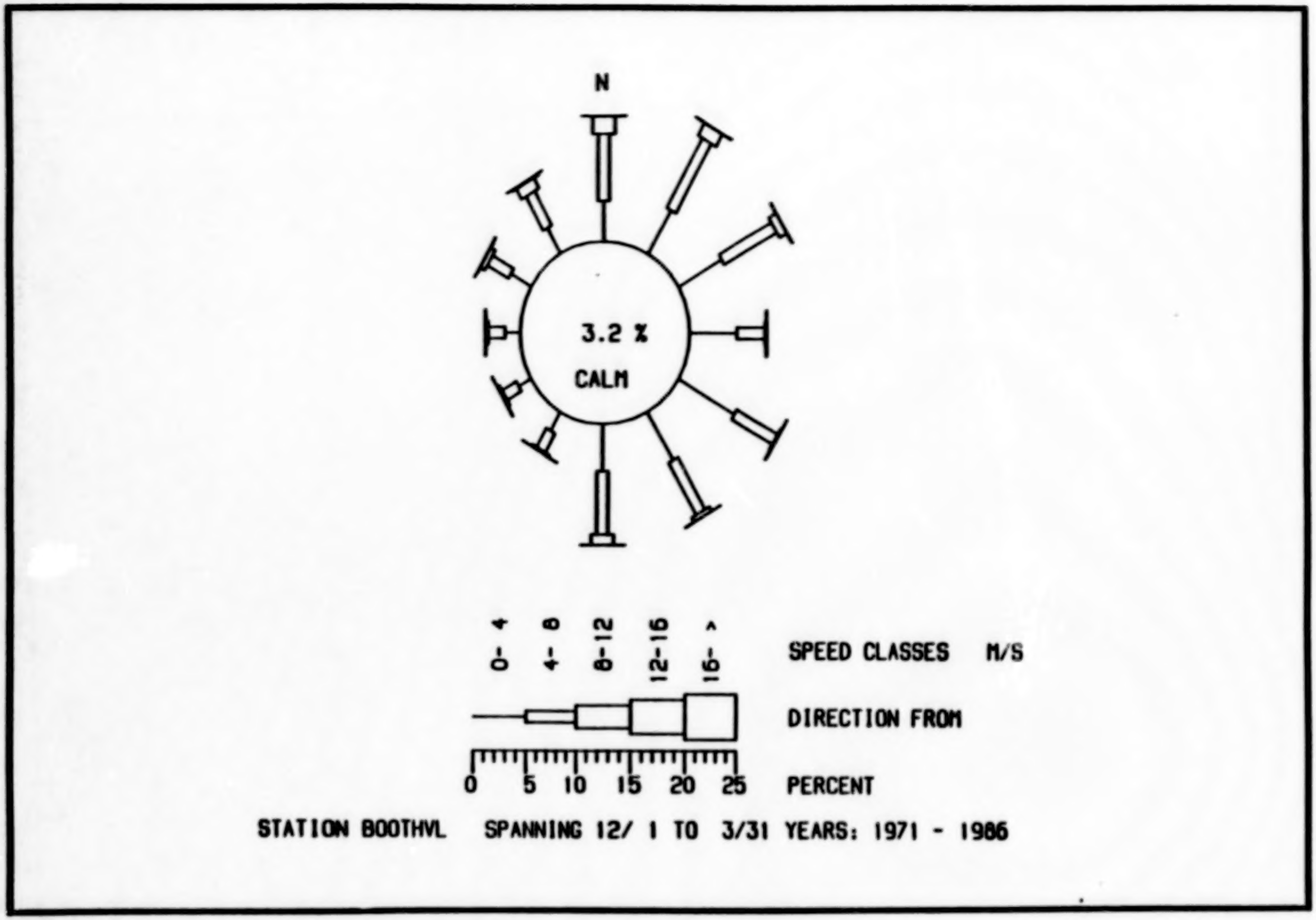

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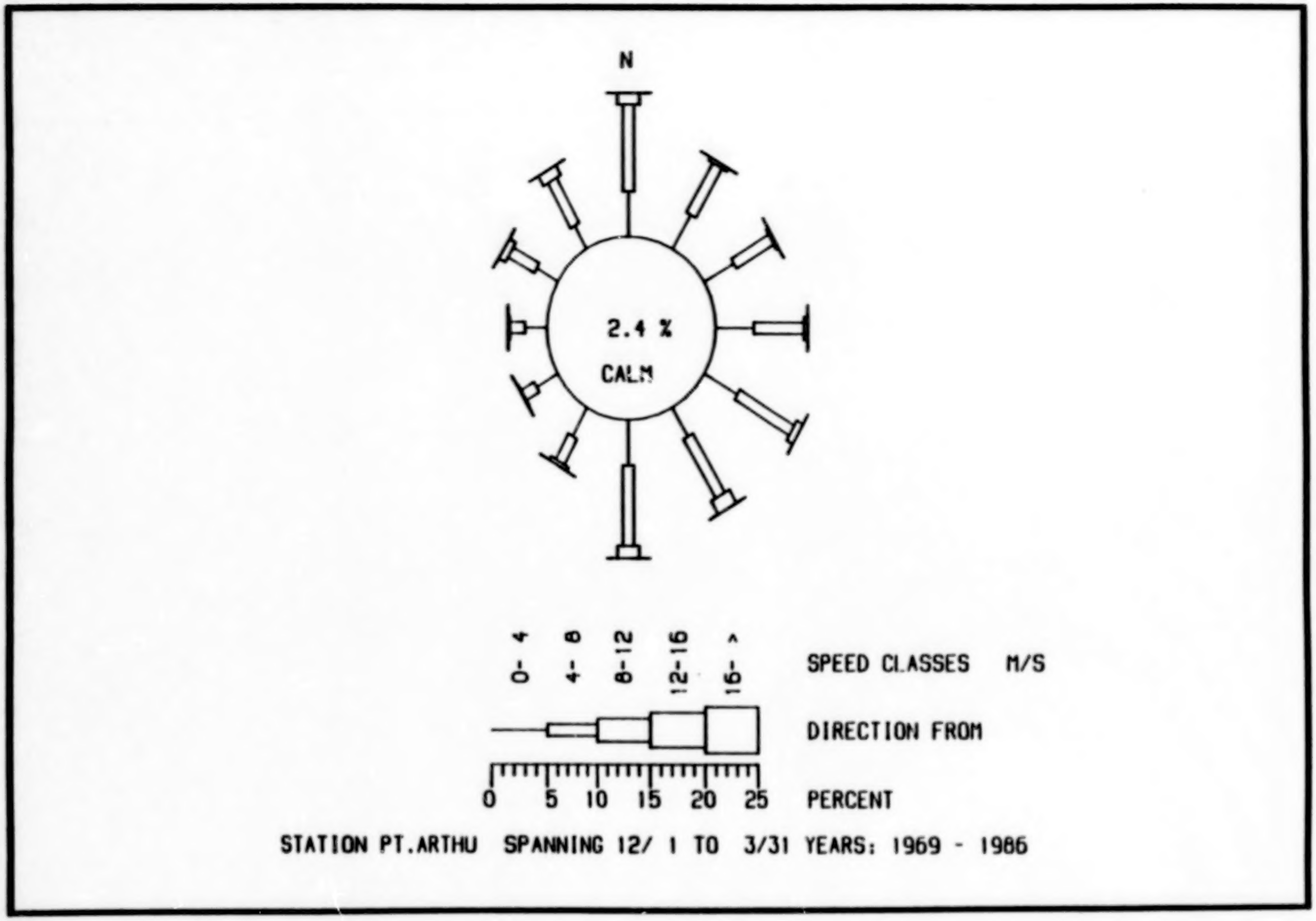

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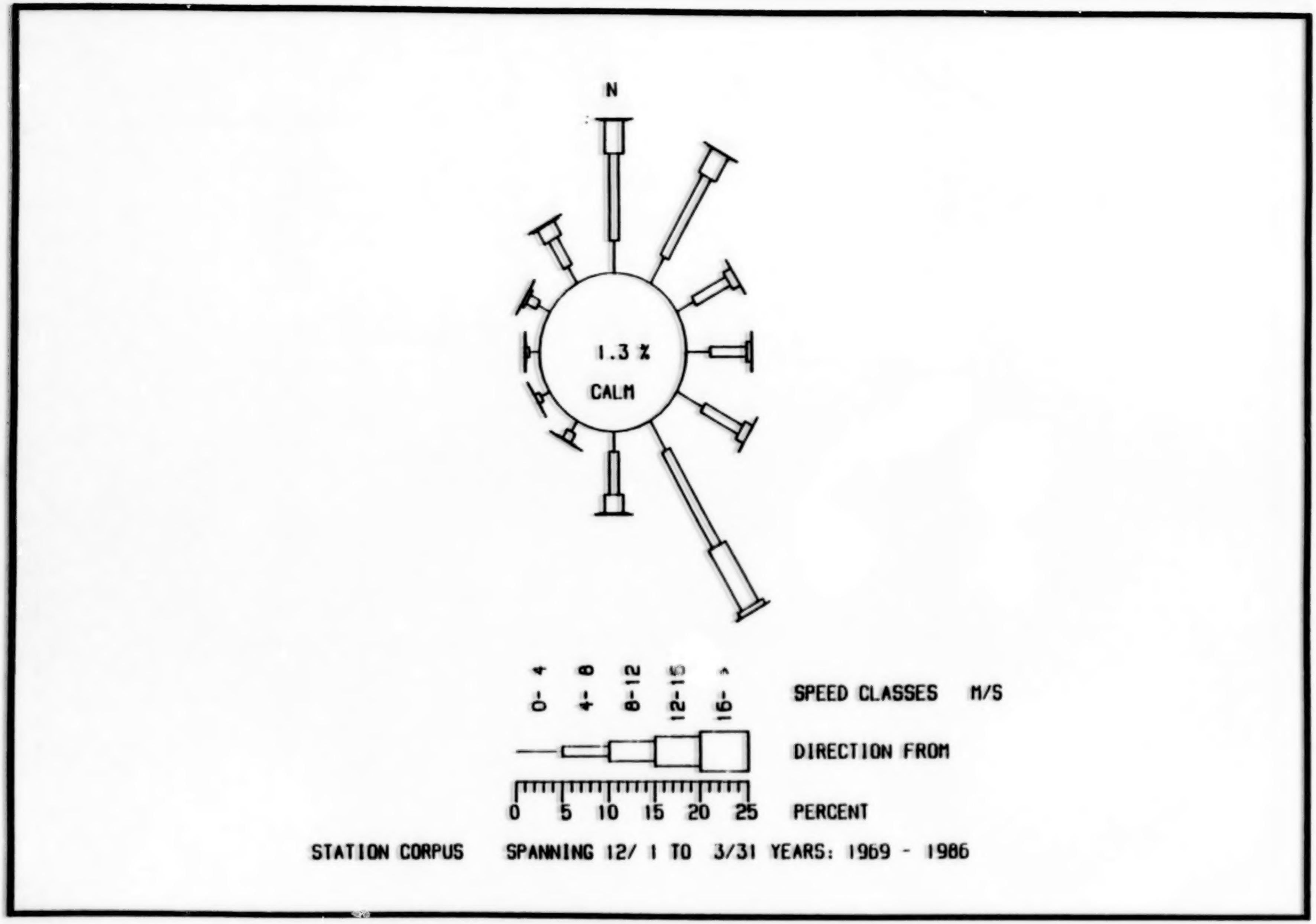
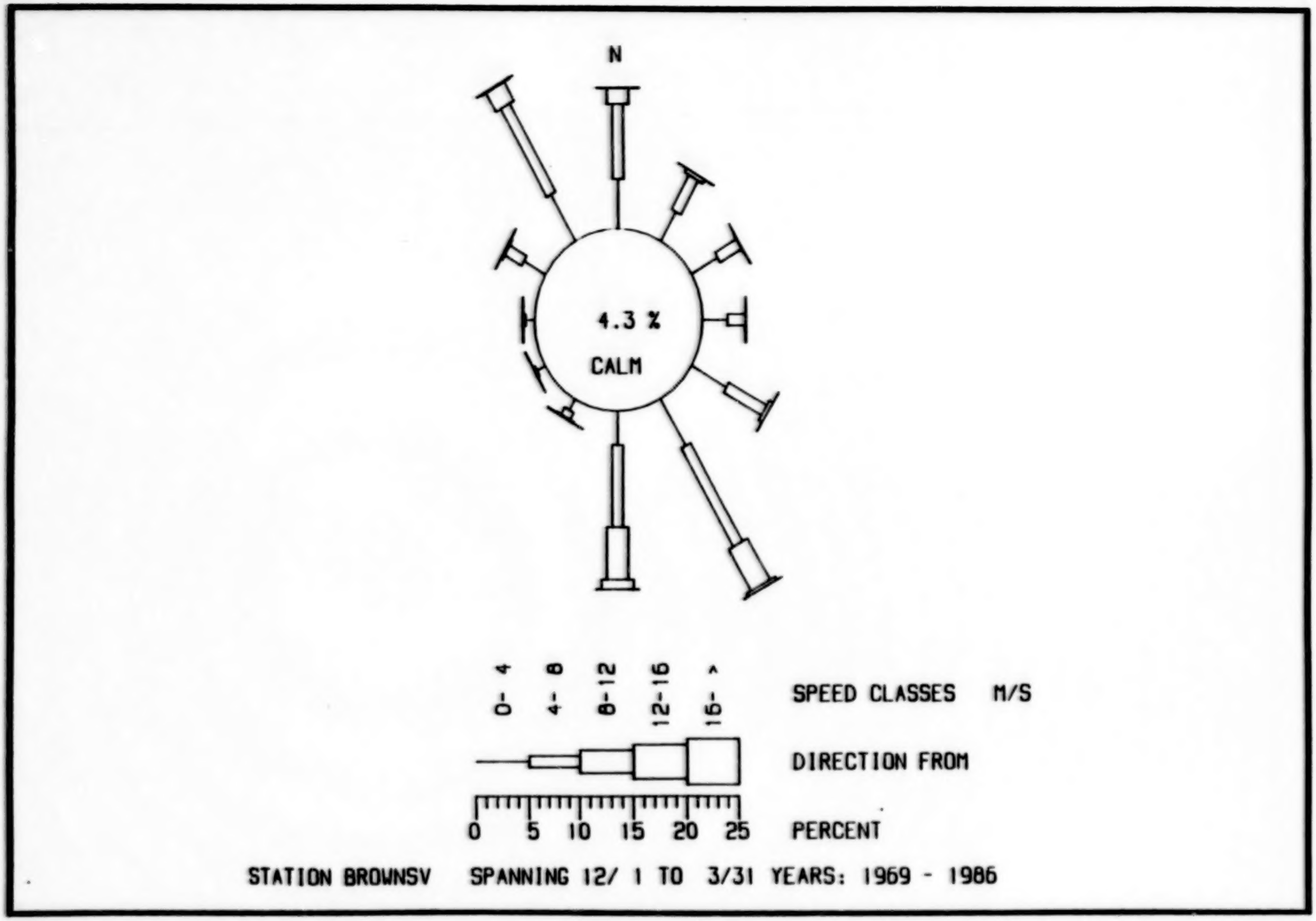


Figure 2.6-3 Winter seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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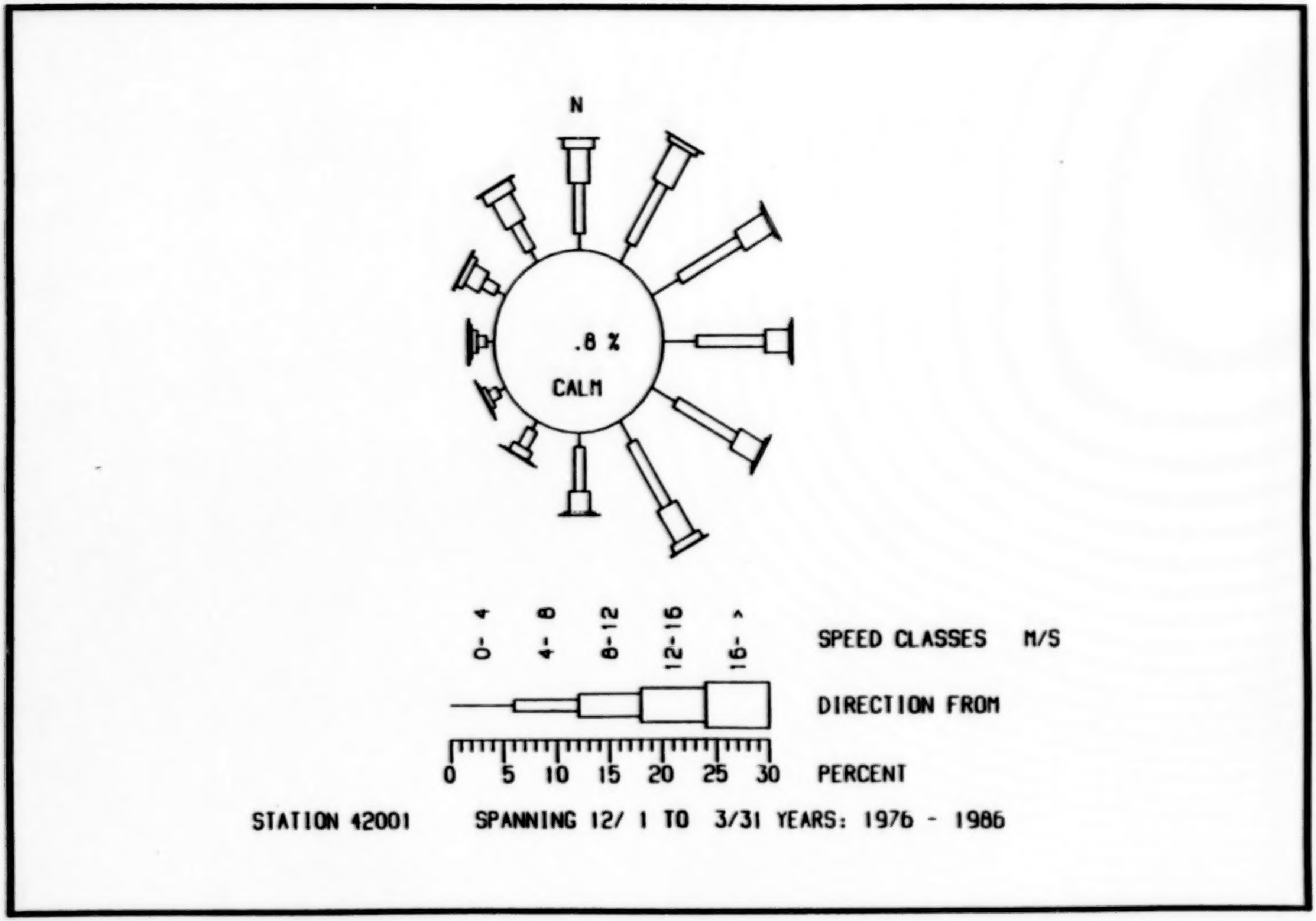

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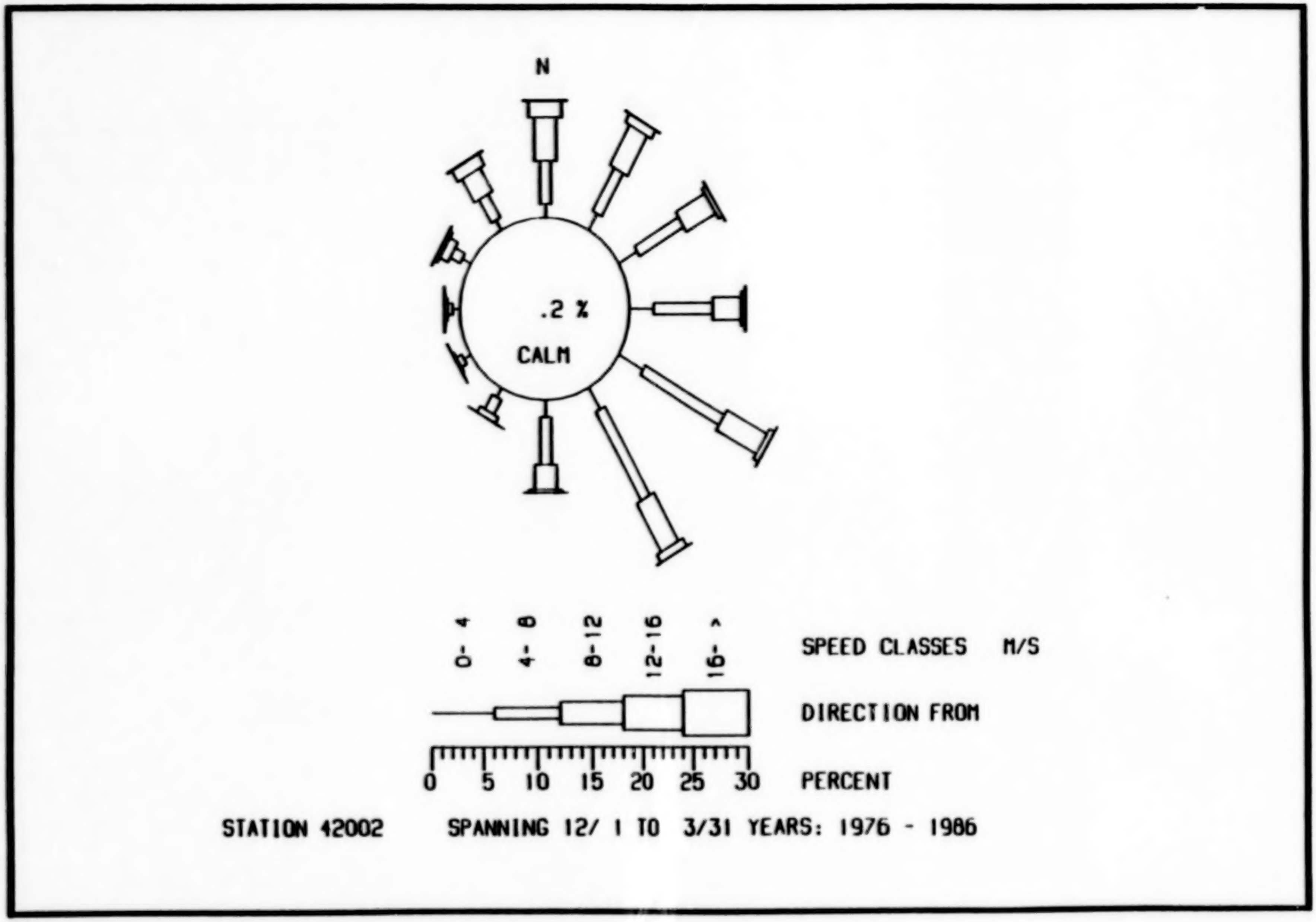

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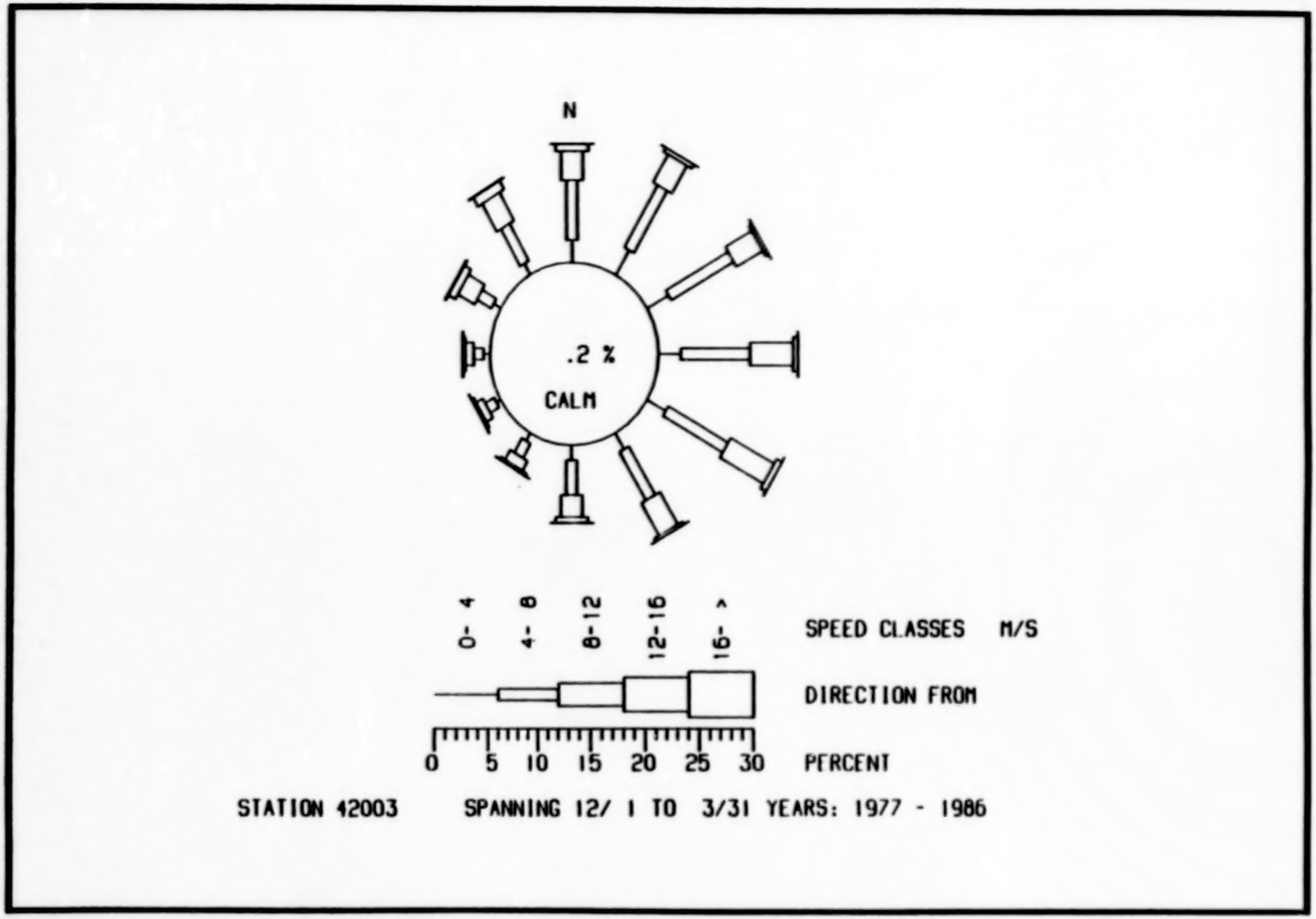
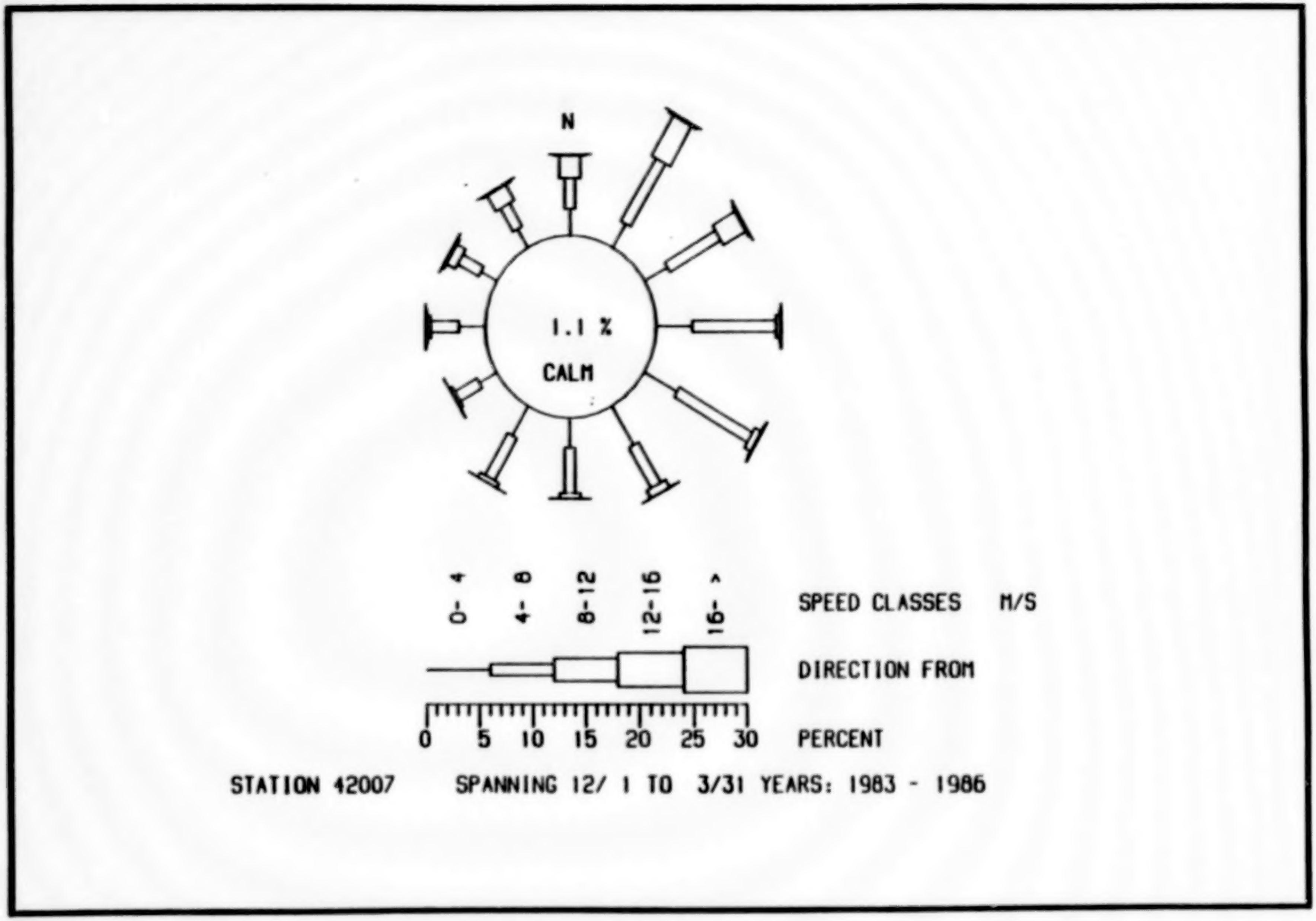


Figure 2.6-3 Winter seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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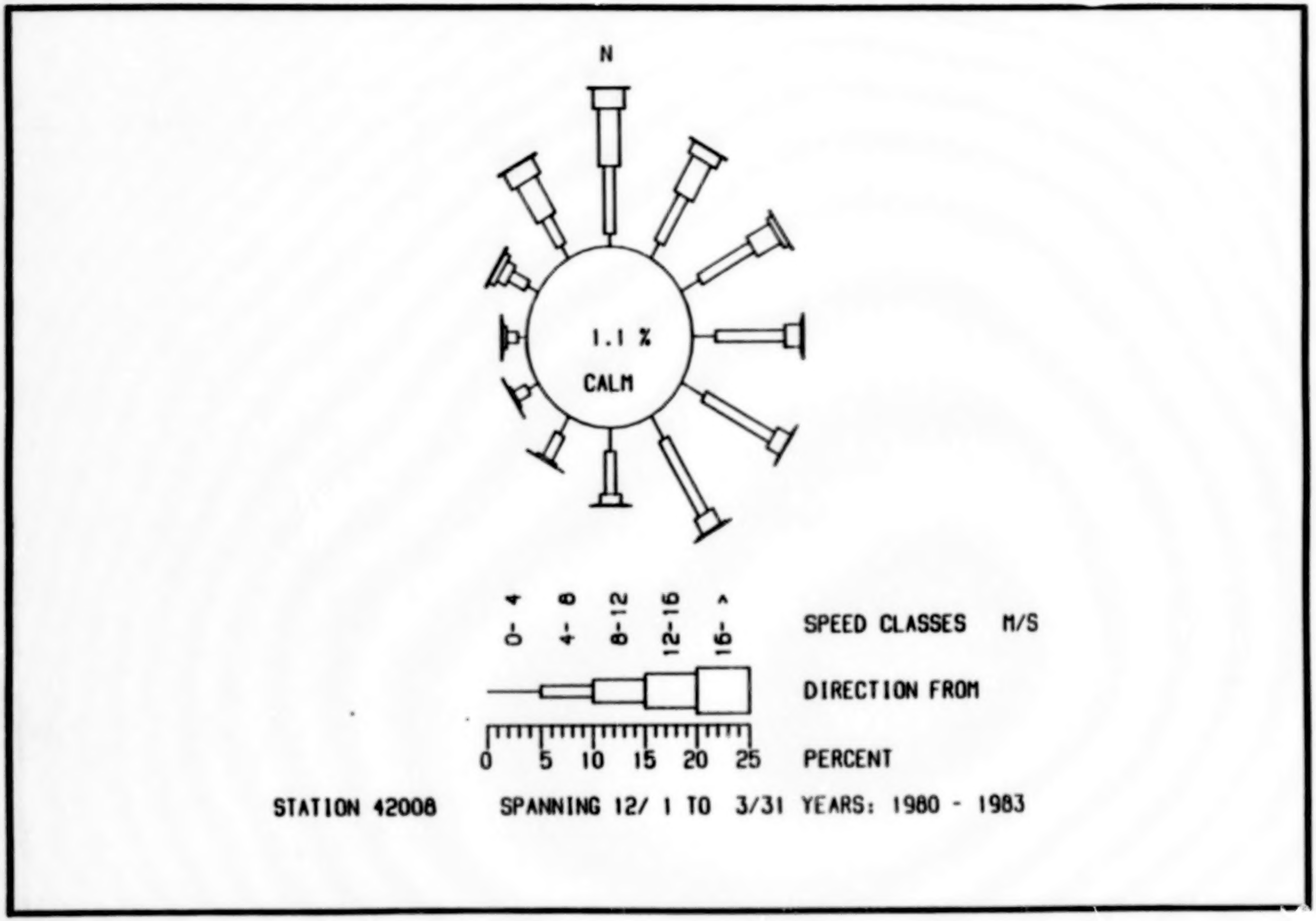

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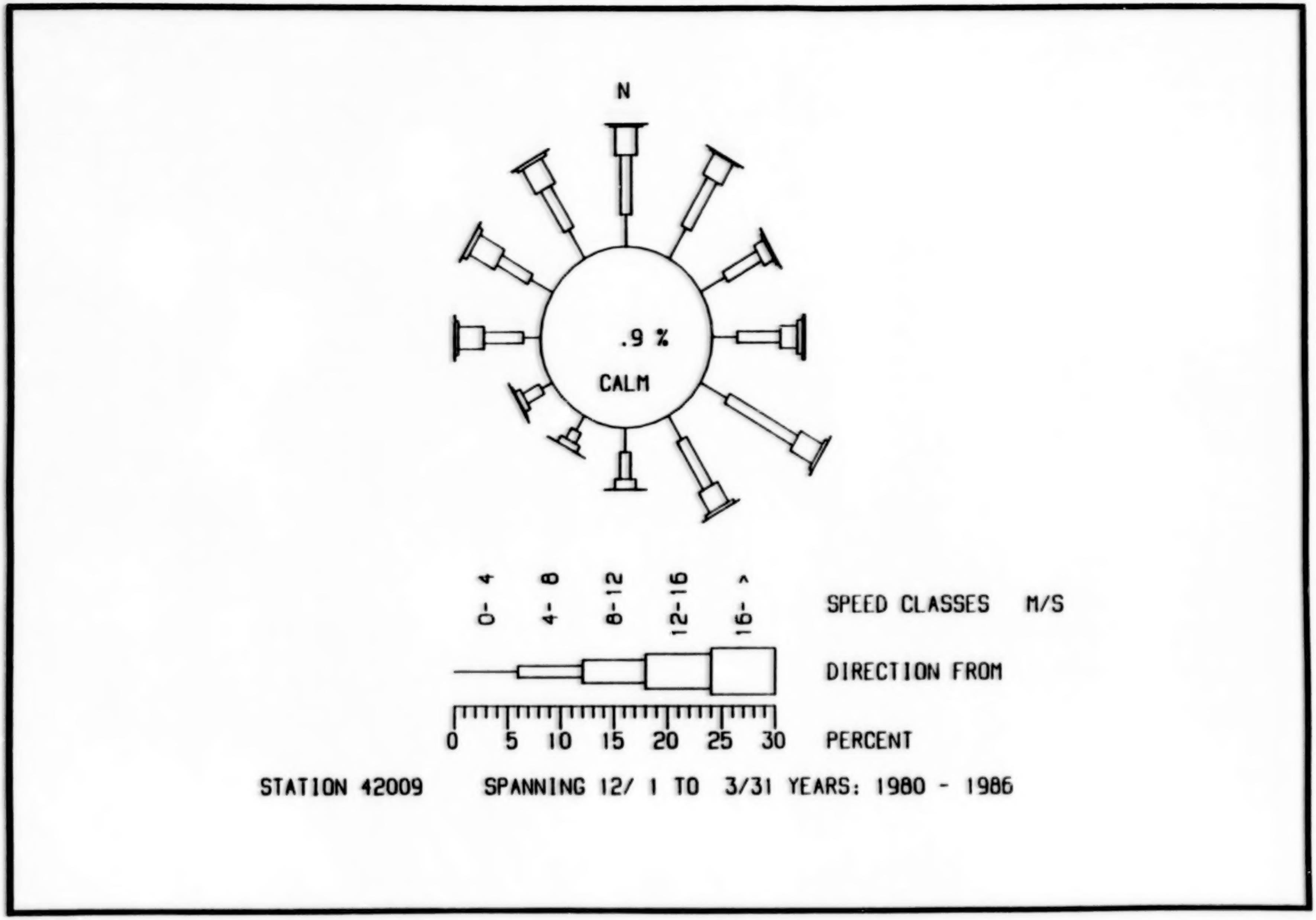

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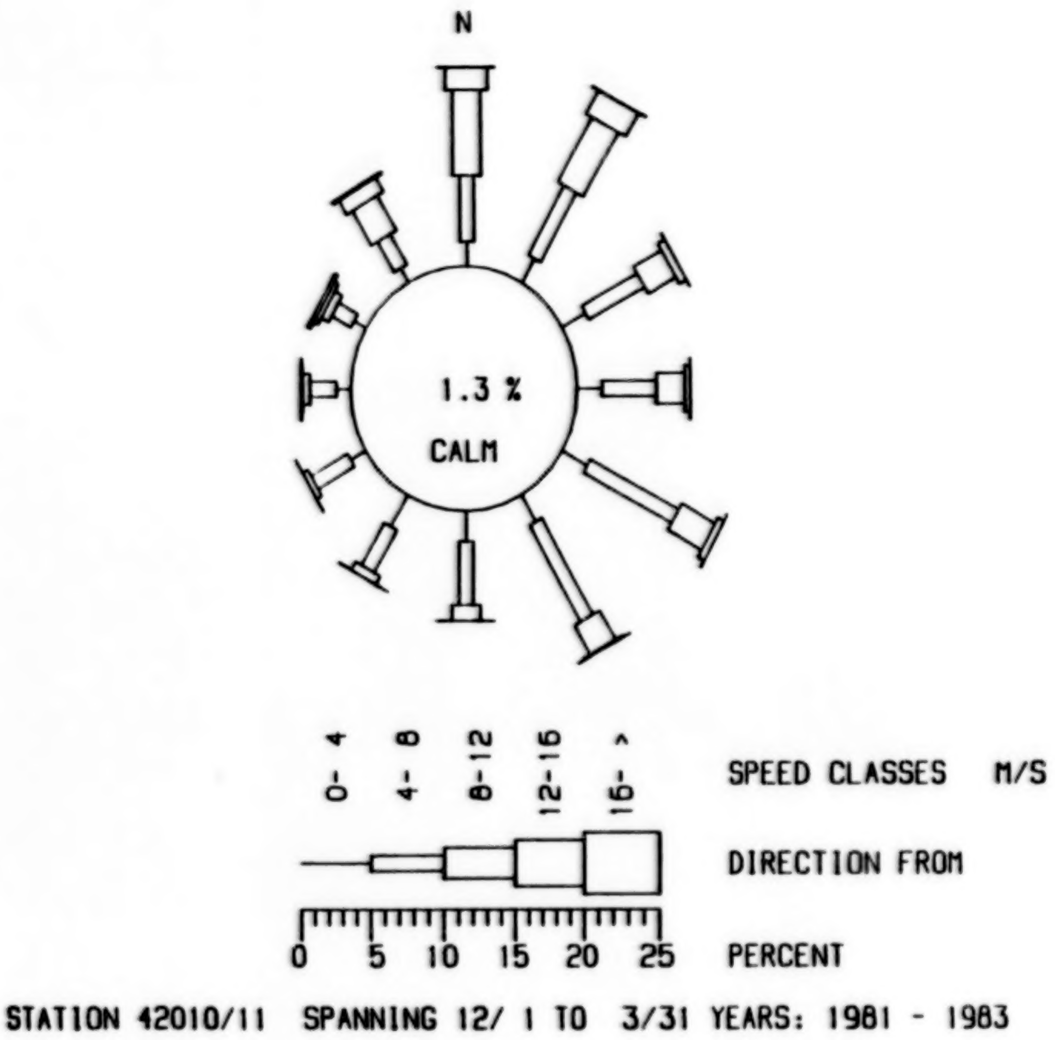

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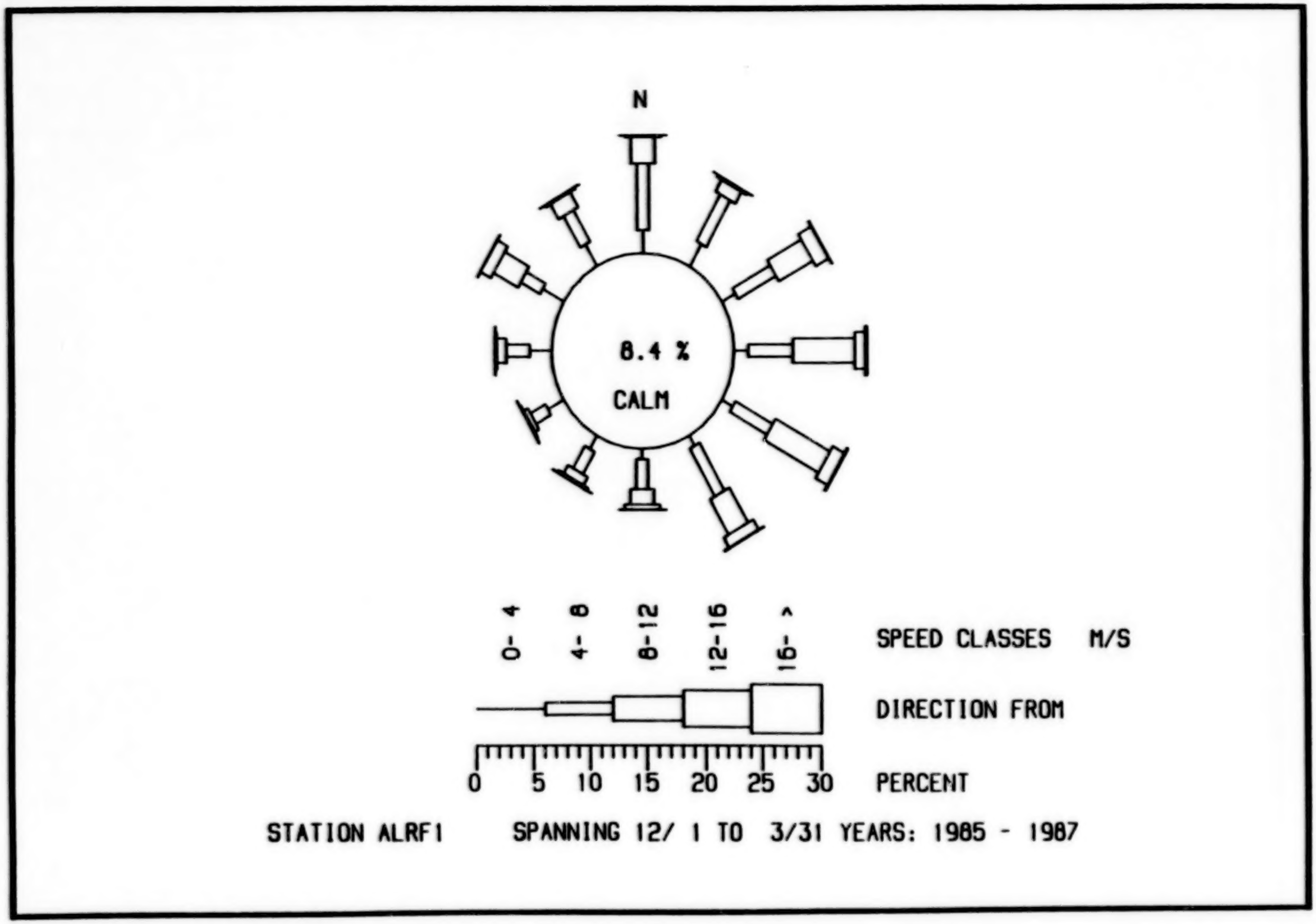

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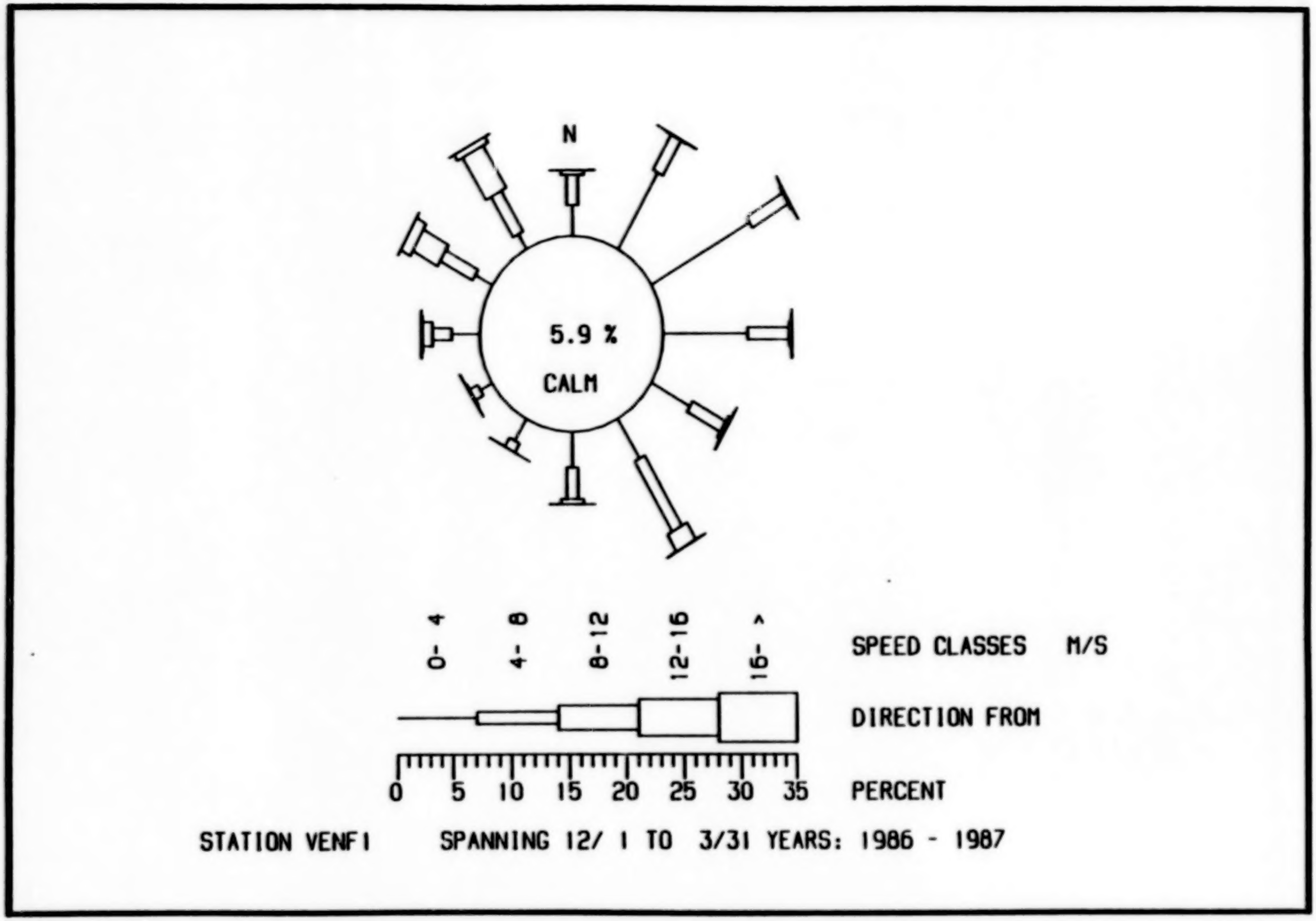

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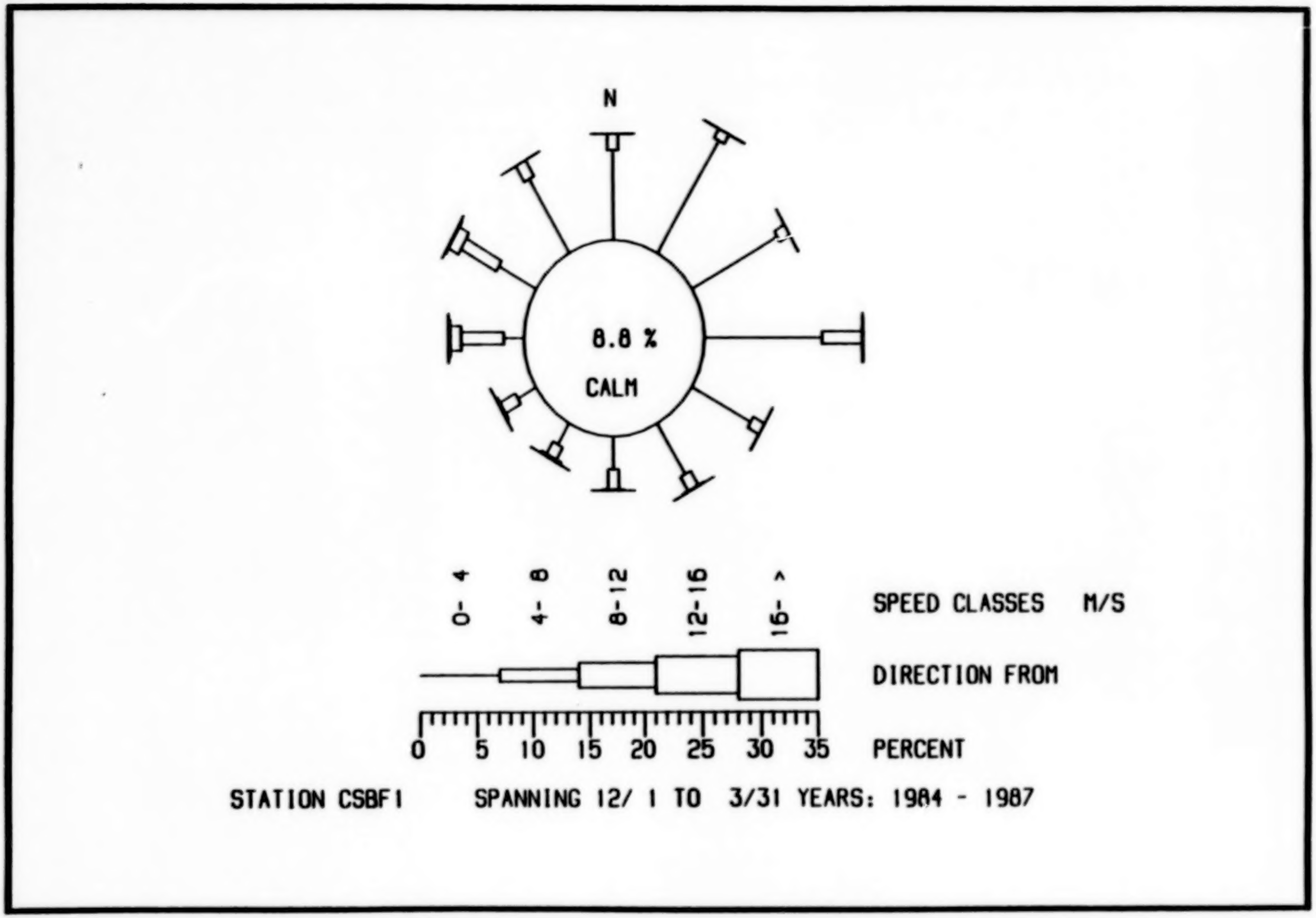

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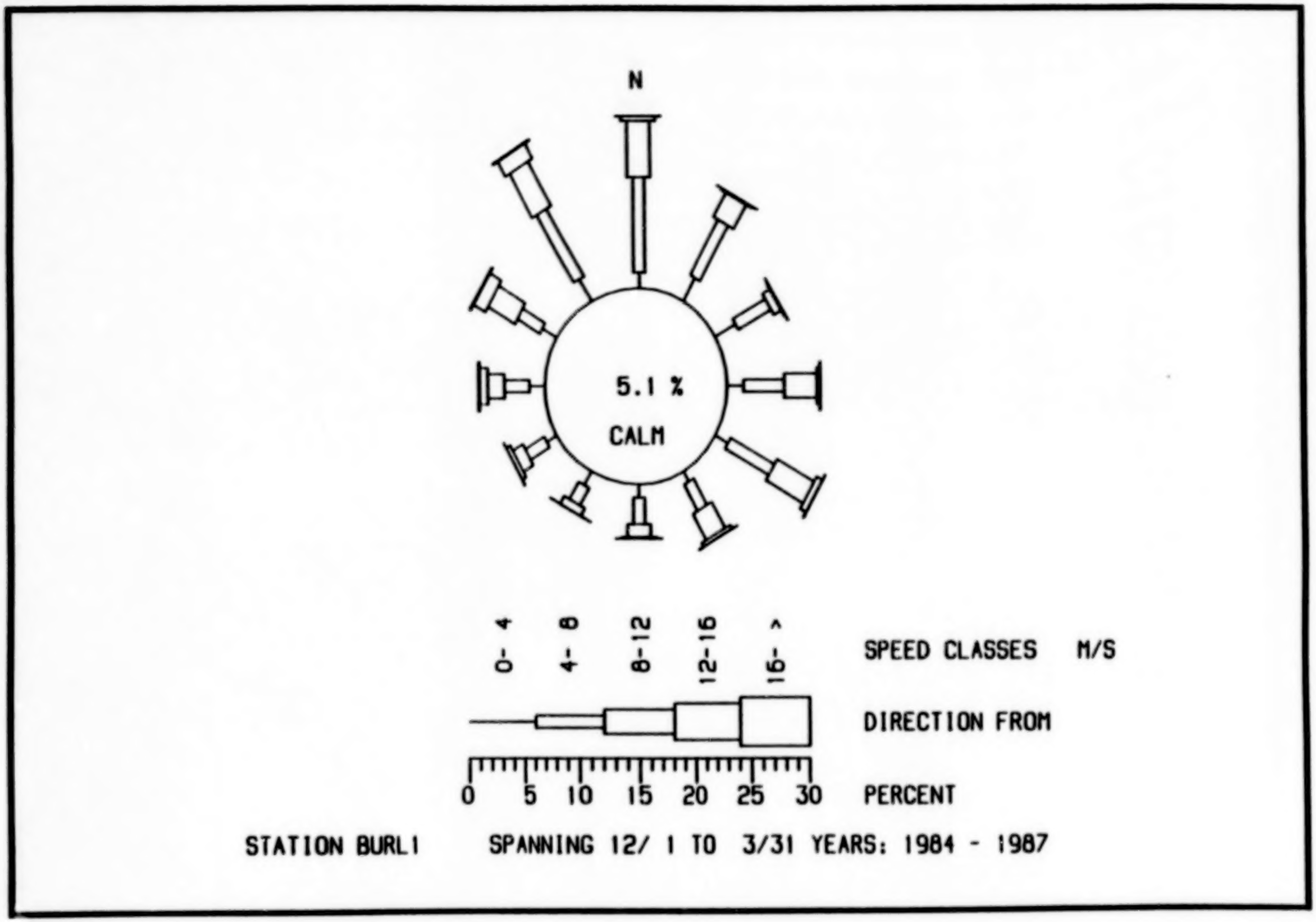

Figure 2.6-3 Winter seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.

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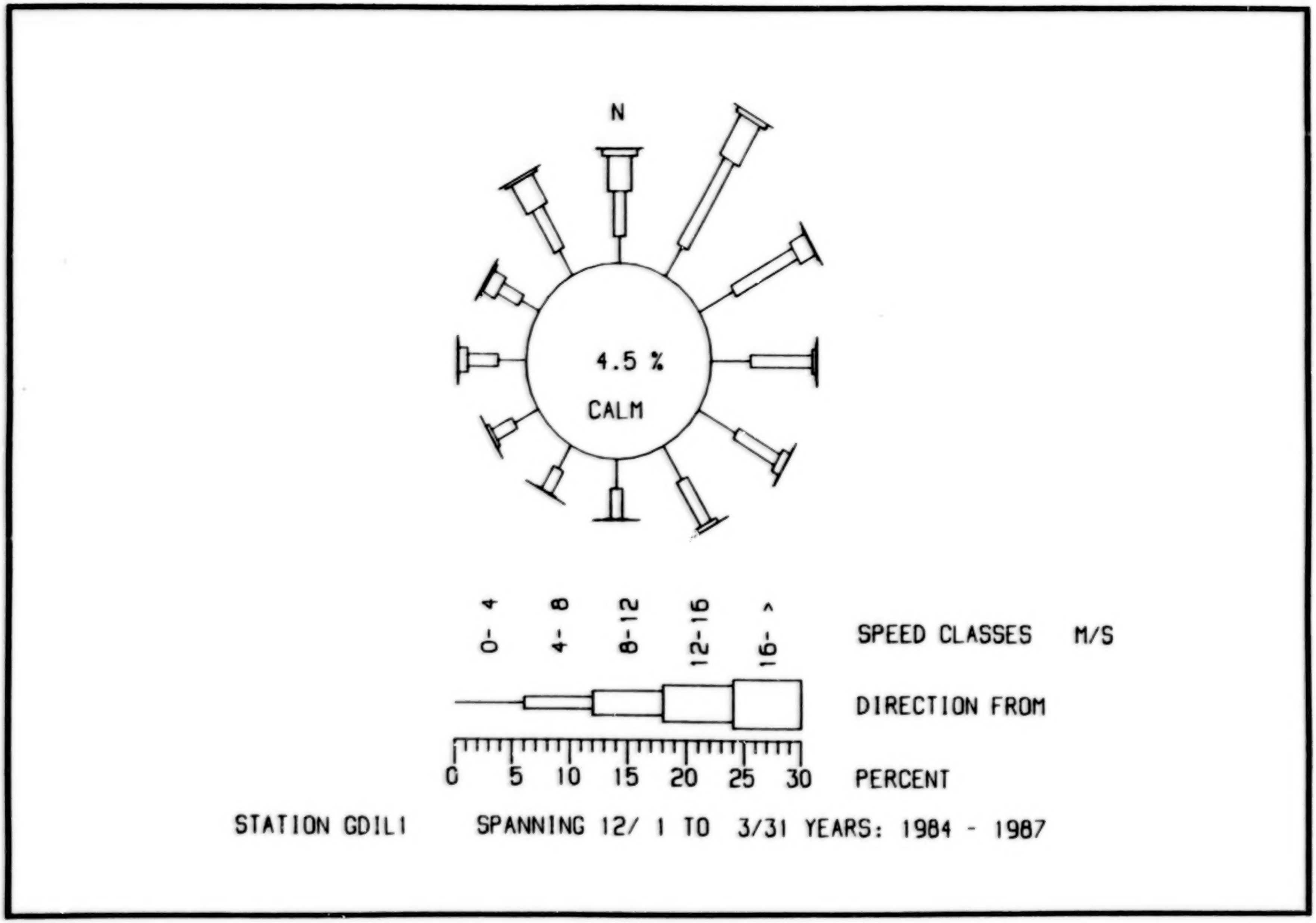

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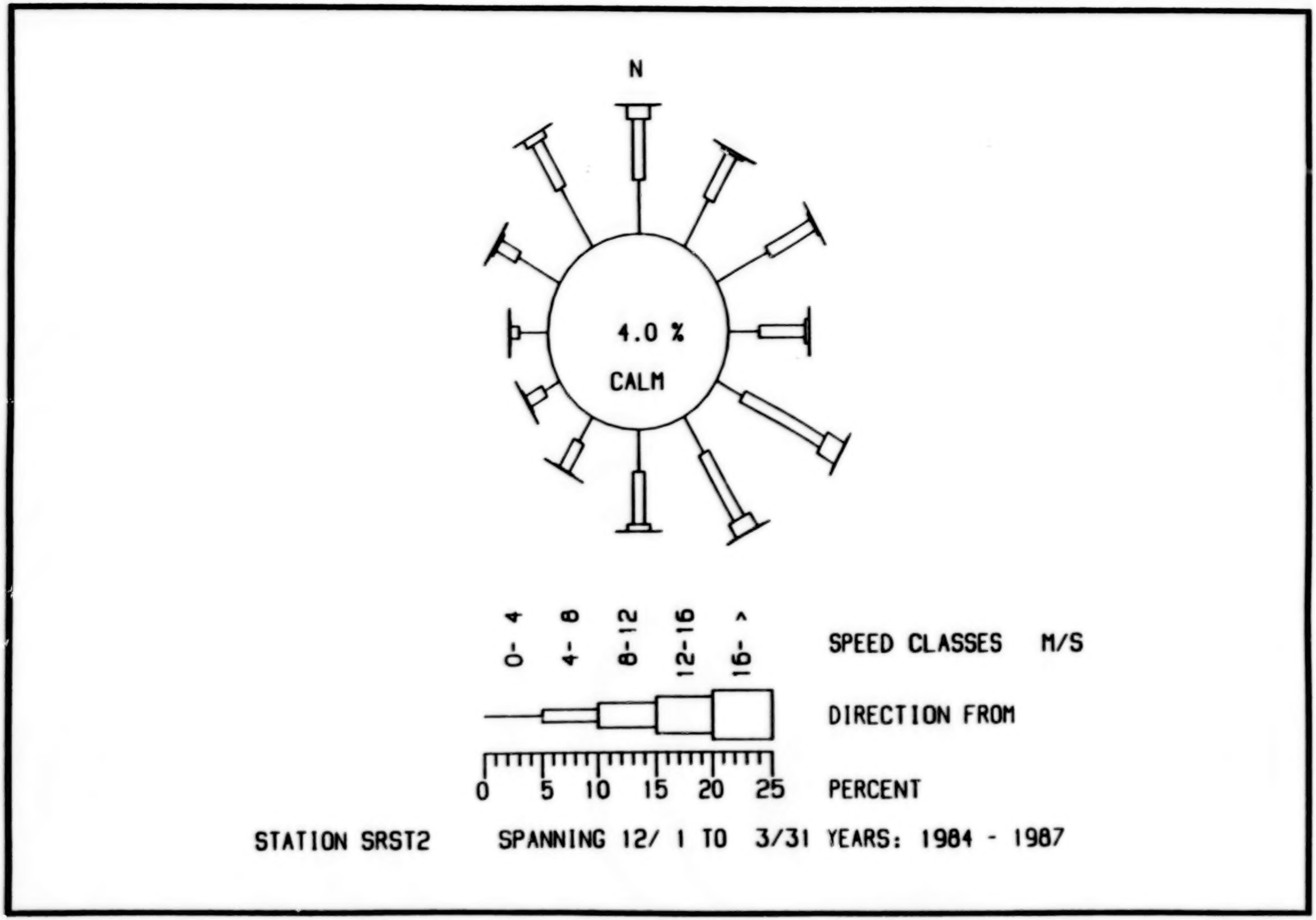

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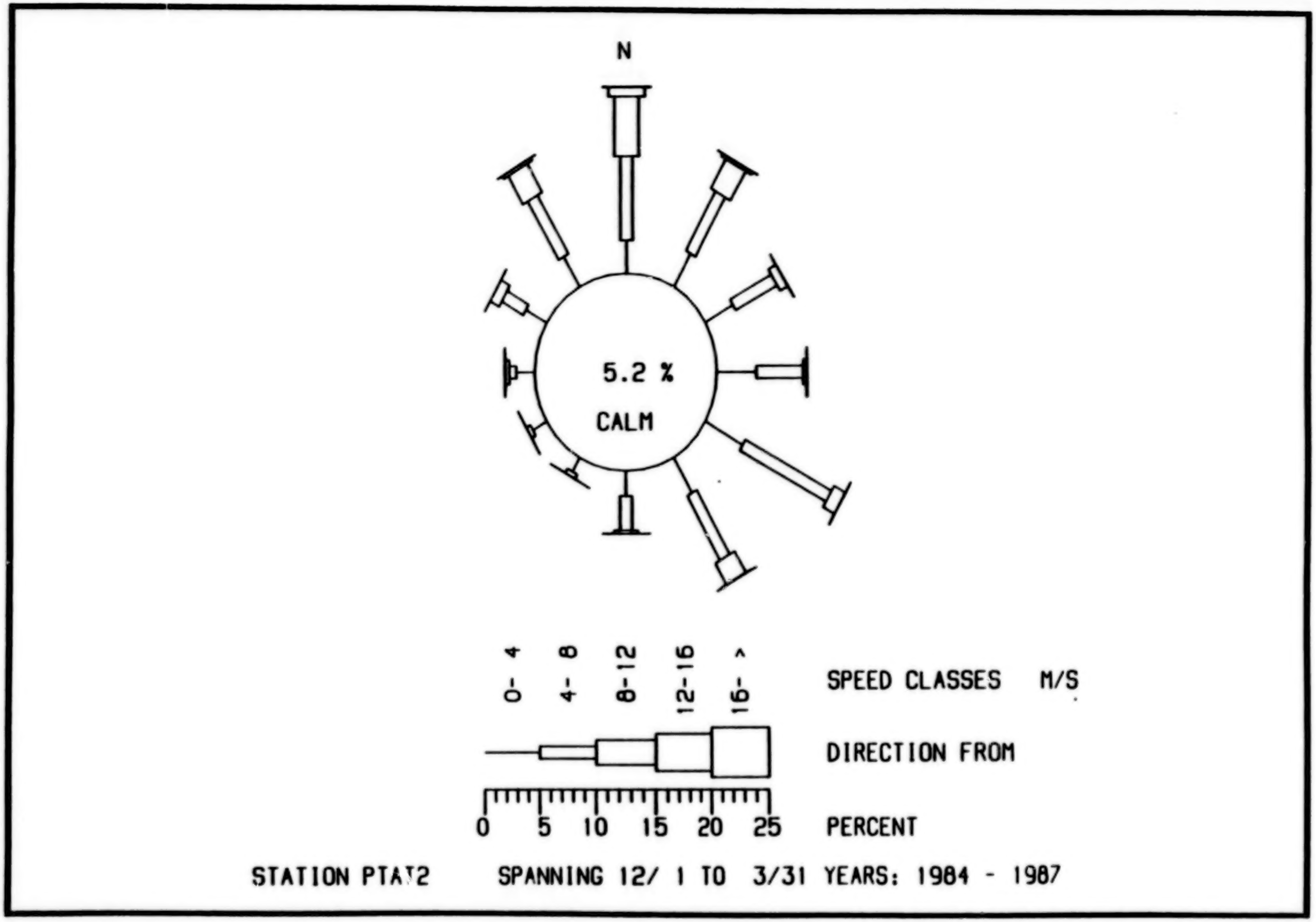

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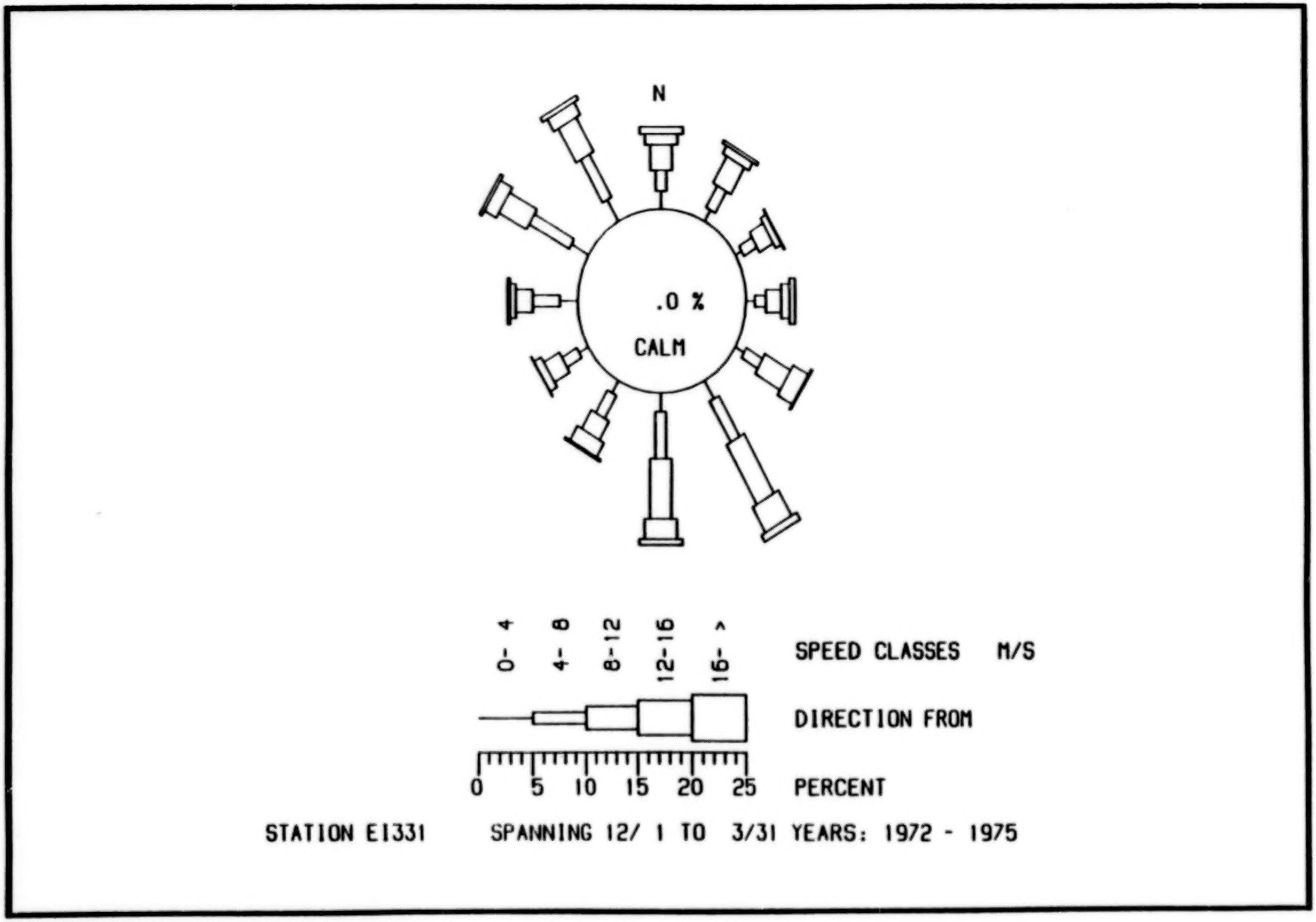

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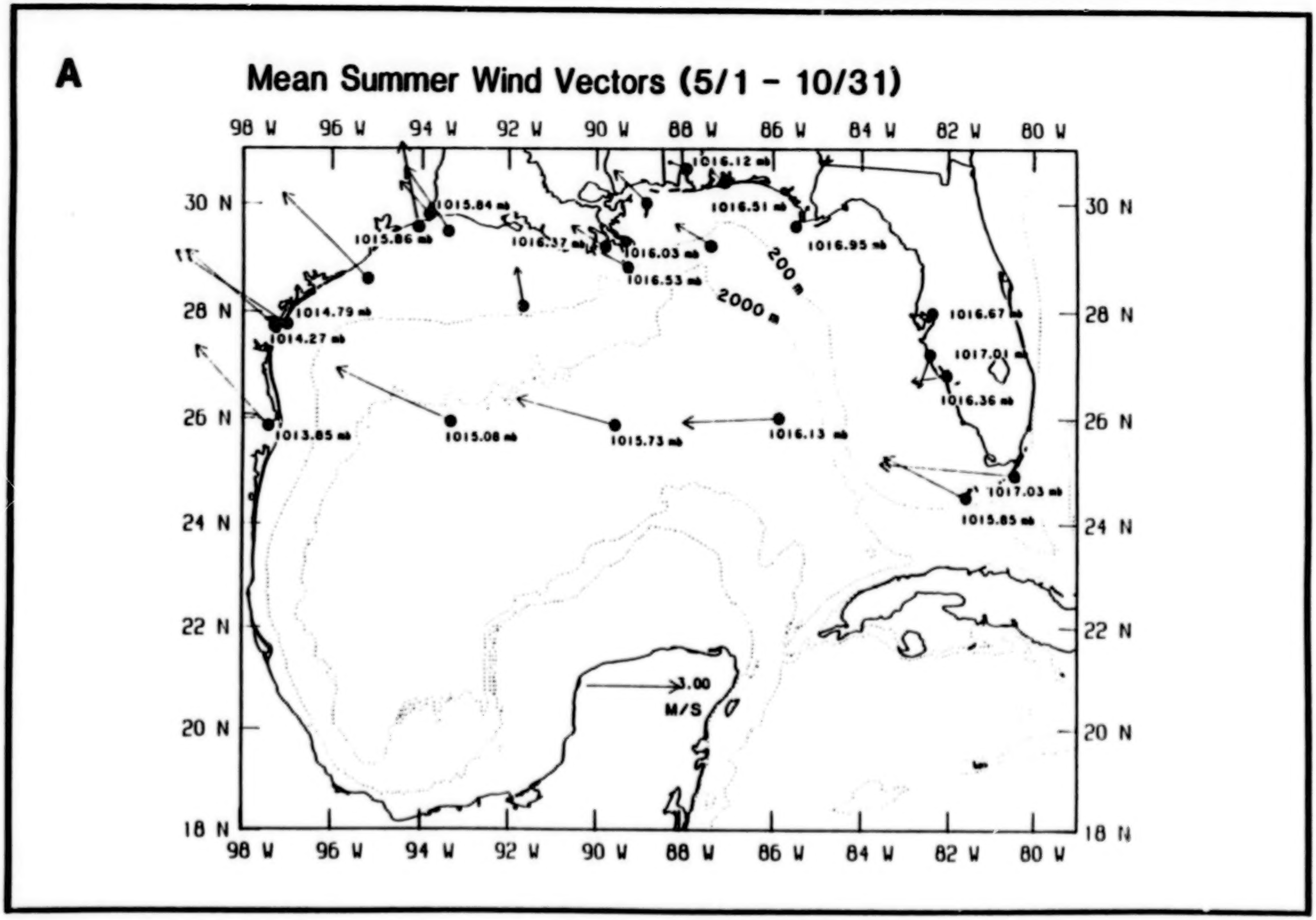

Figure 2.6-4a Summer mean seasonal wind maps of vectors from buoys, CMAN and coastal stations. The station position is at the junction of the tail of the vector and the large dot. Mean atmospheric pressure (mb) is noted next to each station.

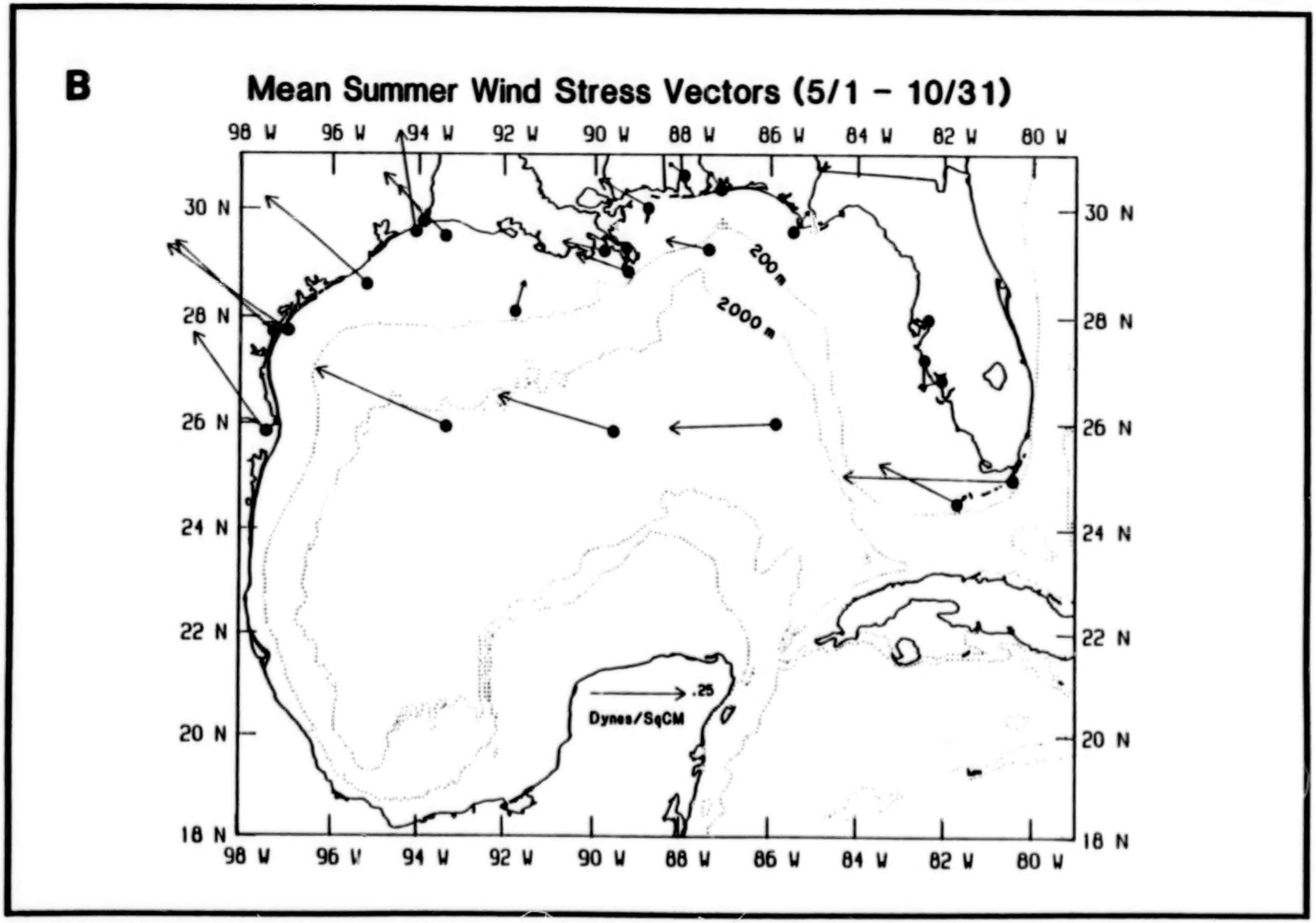

Figure 2.6-4b Summer mean seasonal wind stress maps of vectors from buoys, CMAN and coastal stations. The station position is at the junction of the tail of the vector and the large dot.

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direction in the western Gulf is clearly seen in the wind time series given in Figure 2.6-1a, for Corpus Christi. In addition, this consistency clearly contrasts with the diversity found between mainland and coastal/shelf stations during the winter season. Mean atmospheric pressure for each station is also given on Figure 2.6-4a, with high pressure along the northern and western coast, compared with those along 26°N, producing pressure gradients geostrophically consistent with the mean wind directions. The largest change in wind direction between winter and summer is seen at the buoy off Freeport, Texas (42008) and at the CMAN stations along the Texas-Louisiana coast, where there is about a 90° change from northeasterly to southeasterly, respectively.

The summer wind roses (Figure 2.6-5) again show a marked change between the Florida coast and the buoys and the Texas coastal stations. Thus, the Tampa and Pensacola summer wind roses are similar to their respective winter roses but with a higher percentage of values in the lowest speed category (0-4 ms^{-1}). The 26°N buoys, Brownsville, Corpus Christi and Texas-Louisiana shelf buoys show the predominance of a small range of directions ranging from east-southeast to south-southeast. Mean wind speeds also increase from east to west and from north to south in the eastern Gulf. The Key West rose is again similar to the roses for the 26°N buoys and is strongly influenced by the southeast trade winds. Frequency distributions corresponding to the roses are given in Appendix D (Section D.2).

The transitional months, April and November, can show characteristics of either season. Thus, April in Florida is very similar to March with generally weaker winds and fewer storms. April in south Texas, however, tends to show characteristics of the summer season, with winds predominantly from the southeast. November tends to be more variable, depending on the first winter storms and whether the jet stream shifts to south over the Great Plains. Thus, for completeness, the wind roses for April and November are shown in Figures 2.6-6 and 2.6-7, respectively. Because of shorter periods and fewer data values, particularly for shelf buoys, mean wind vectors are not displayed. However, the mean east and north wind components for April and November are given in the Appendix D (Section D.3) frequency distribution tables.

2.7 Synoptic-Scale Atmospheric Systems

2.7.1 Extratropical Cyclones

The winter season storm track climatology is influenced strongly by the extratropical cyclone tracks in the Gulf of Mexico. The maximum (4.2 storms during the 4-month period in a 2½° latitude by 5° longitude cell) value is found in grid cell 4, located in the north central Gulf, using the 100-year data set (initially described by Hayden, 1980). This data is presented graphically in Figure 2.7.1-1. This analysis delineates the Texas-Louisiana shelf area as a most prominent region for storm tracks during the winter season in the Gulf of Mexico. As one would expect, the mean and standard deviation of the storm frequencies tend to decrease in the southerly and easterly direction. Below approximately 25°N, the mean storm frequencies fall below 1 occurrence during the winter period. Following the earlier work of Bosserman and Dolan (1968), these two regions (i.e. Texas-Louisiana shelf, north central Gulf) have been shown to represent areas of cyclogenesis for storm tracks passing in the vicinity of Cape Hatteras. These two storm tracks are classified as types 4 and 5 in Bosserman and Dolan's (1968) original manuscript.

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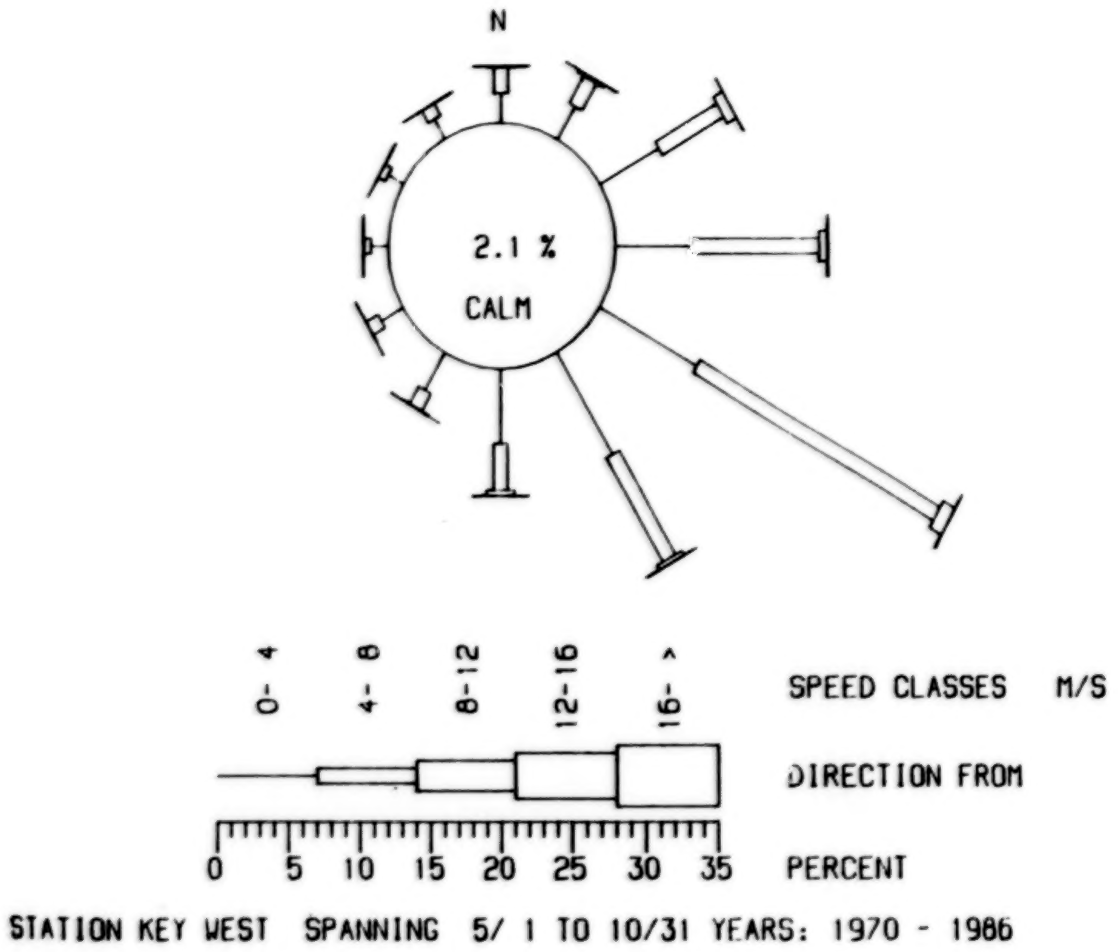
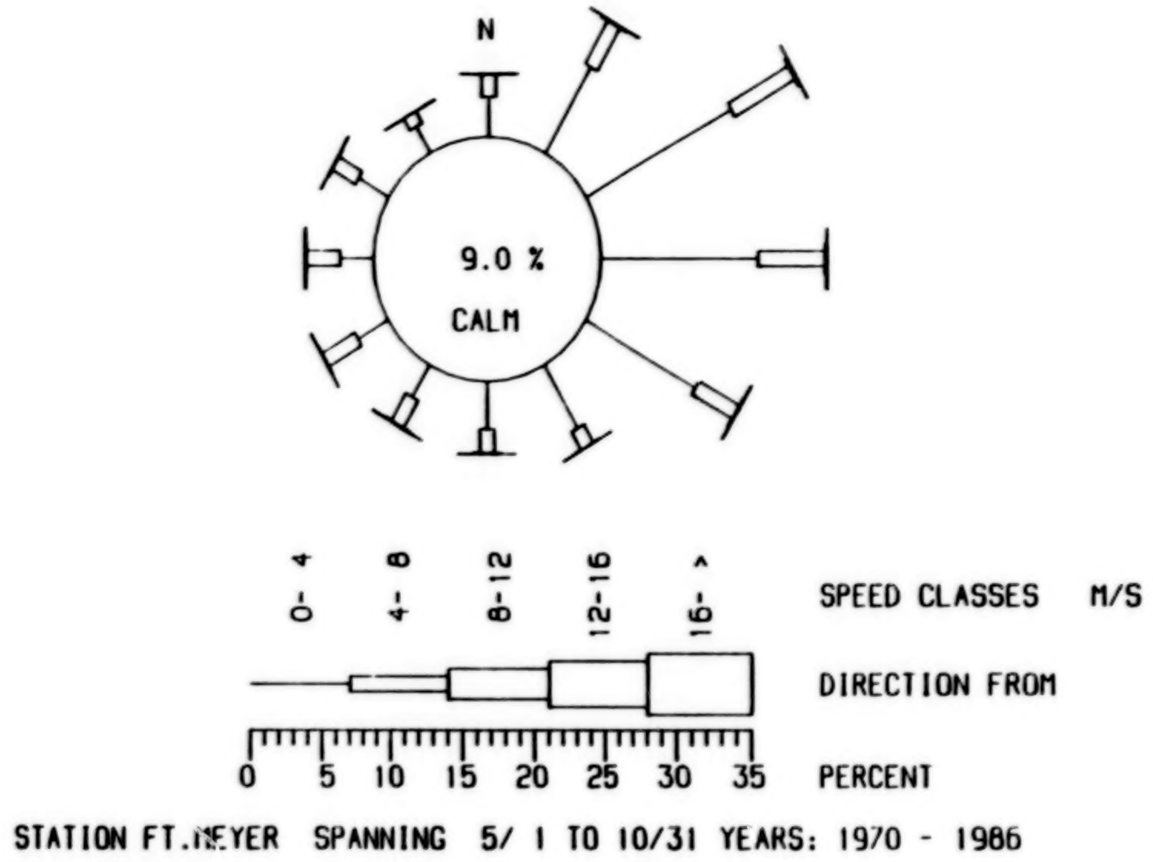


Figure 2.6-5 **Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.**



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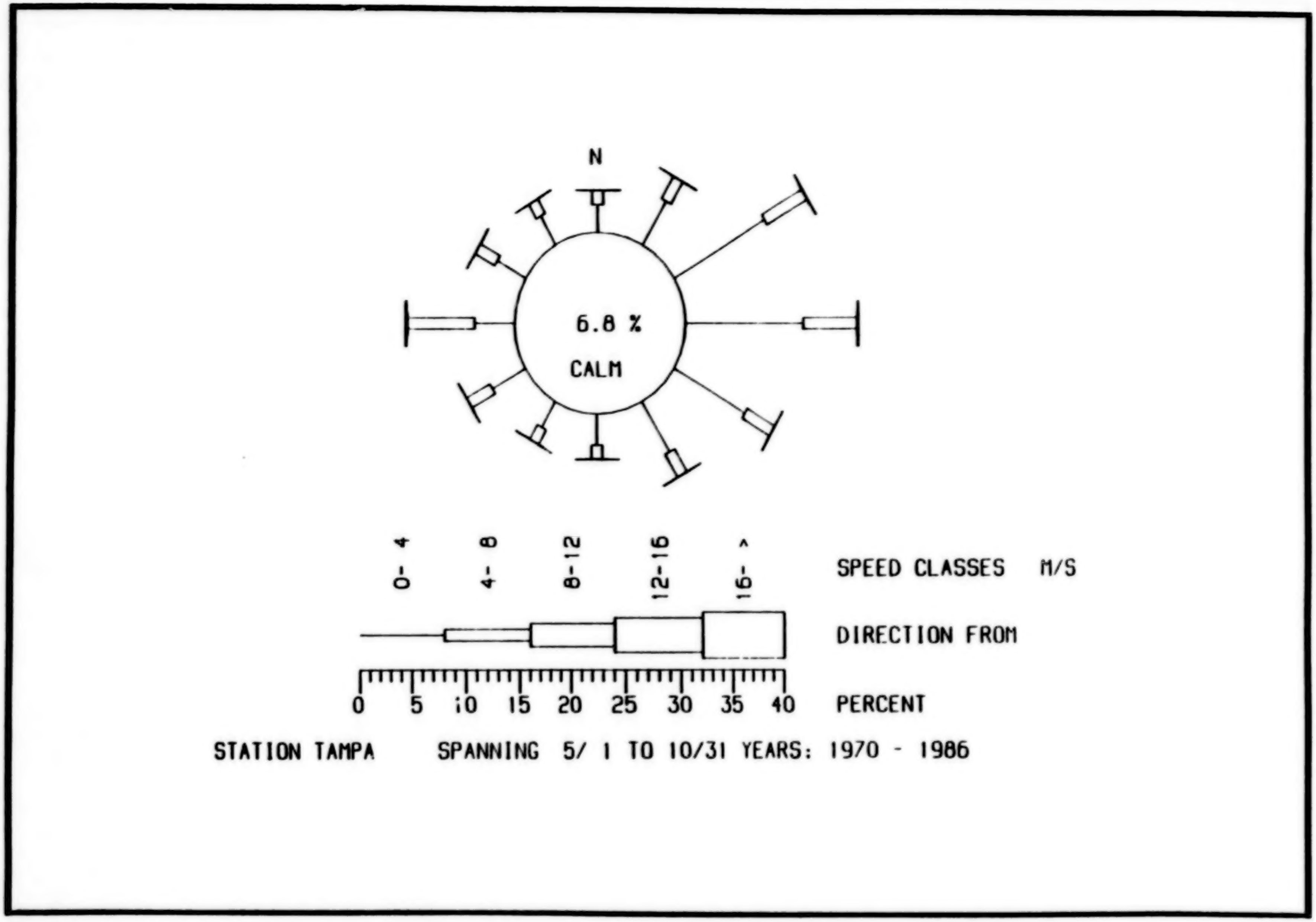
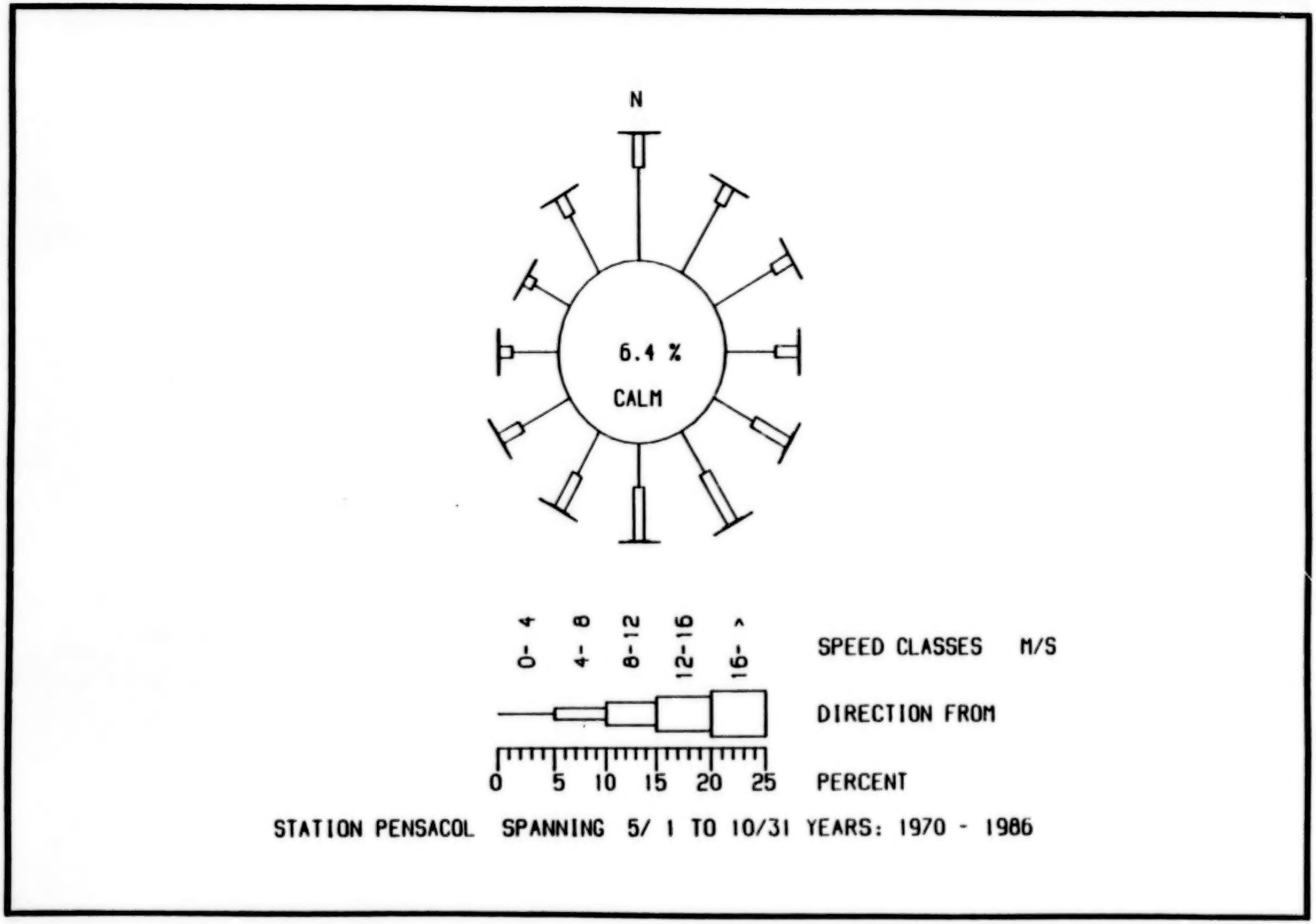


Figure 2.6-5 Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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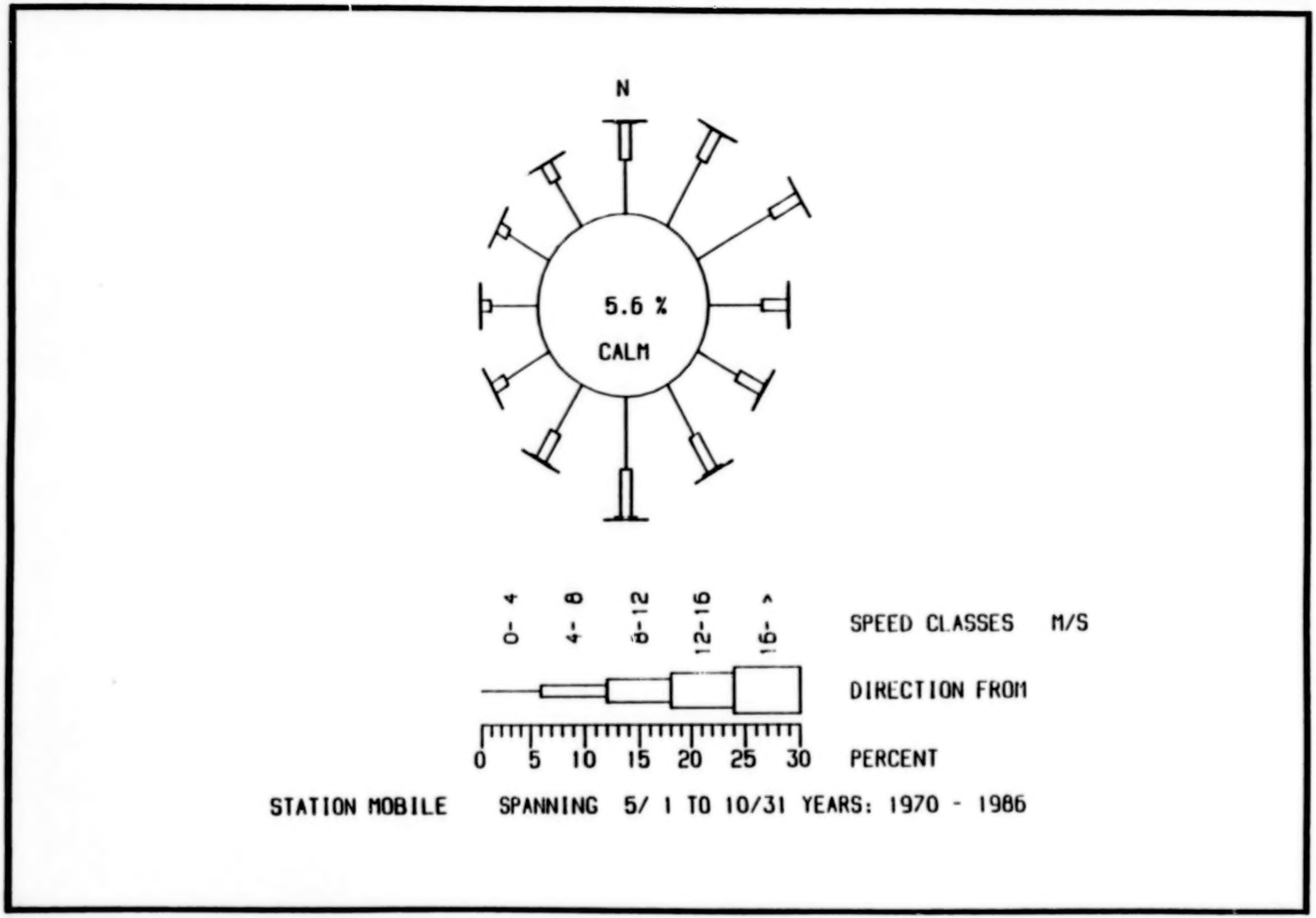

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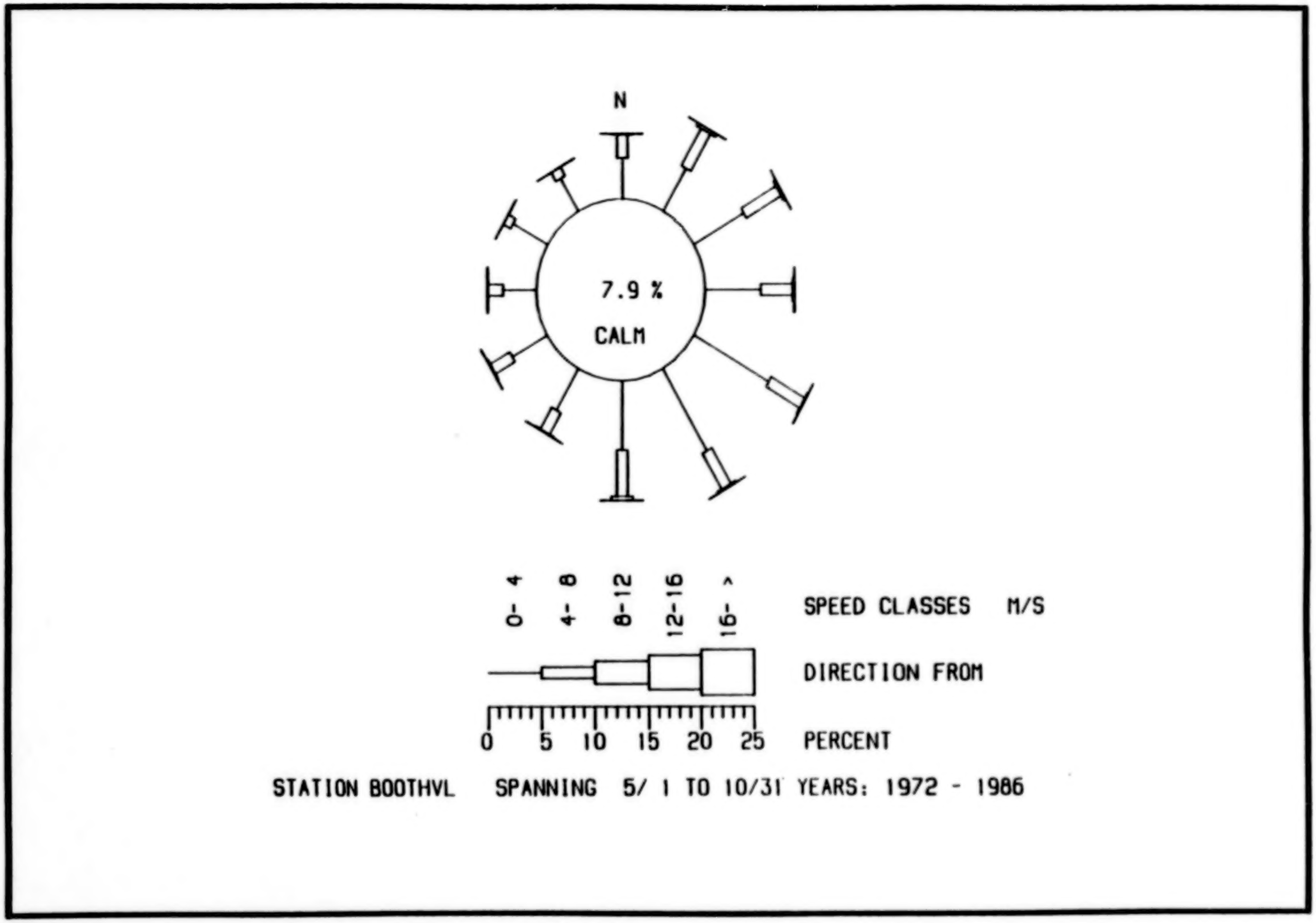

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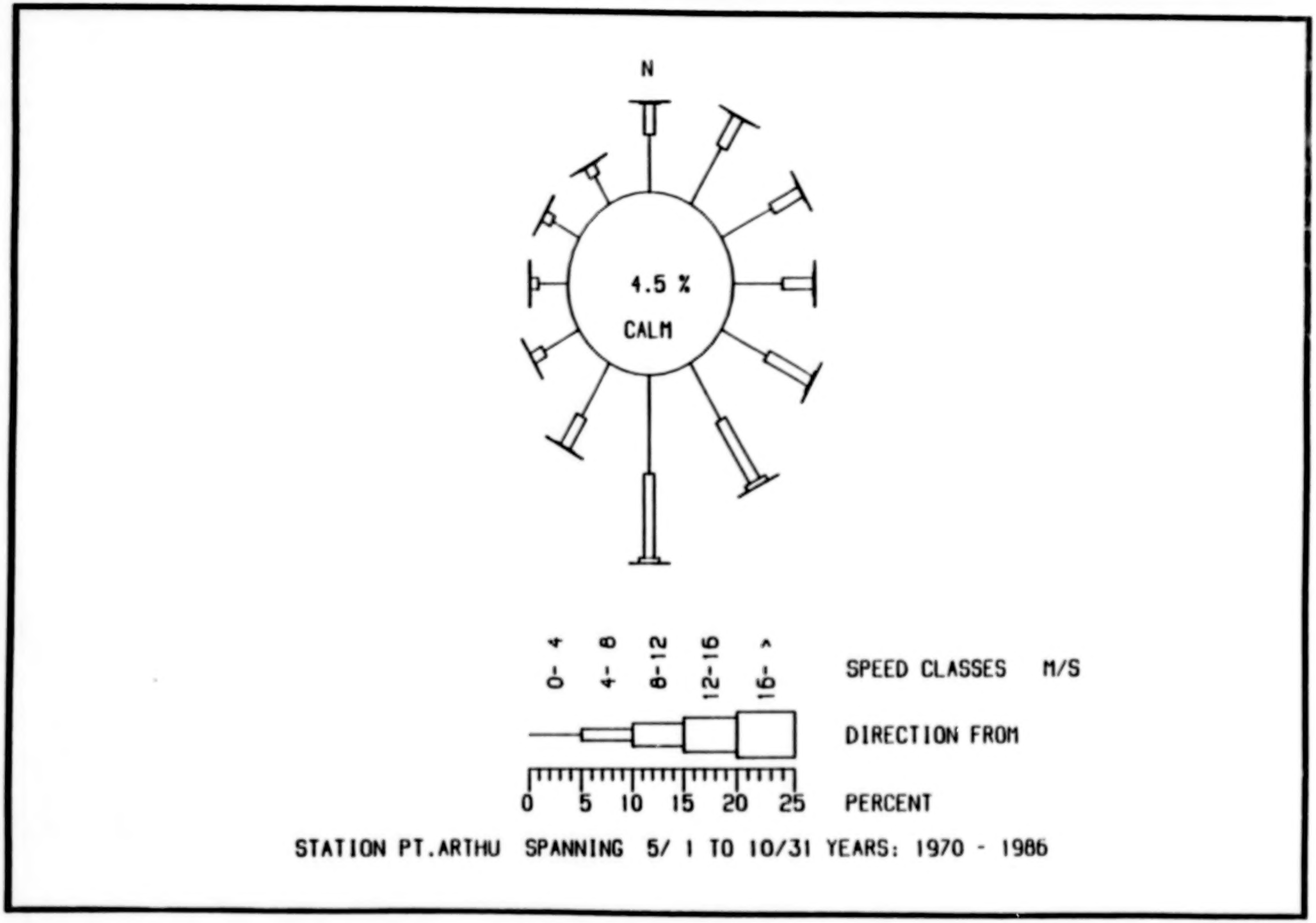

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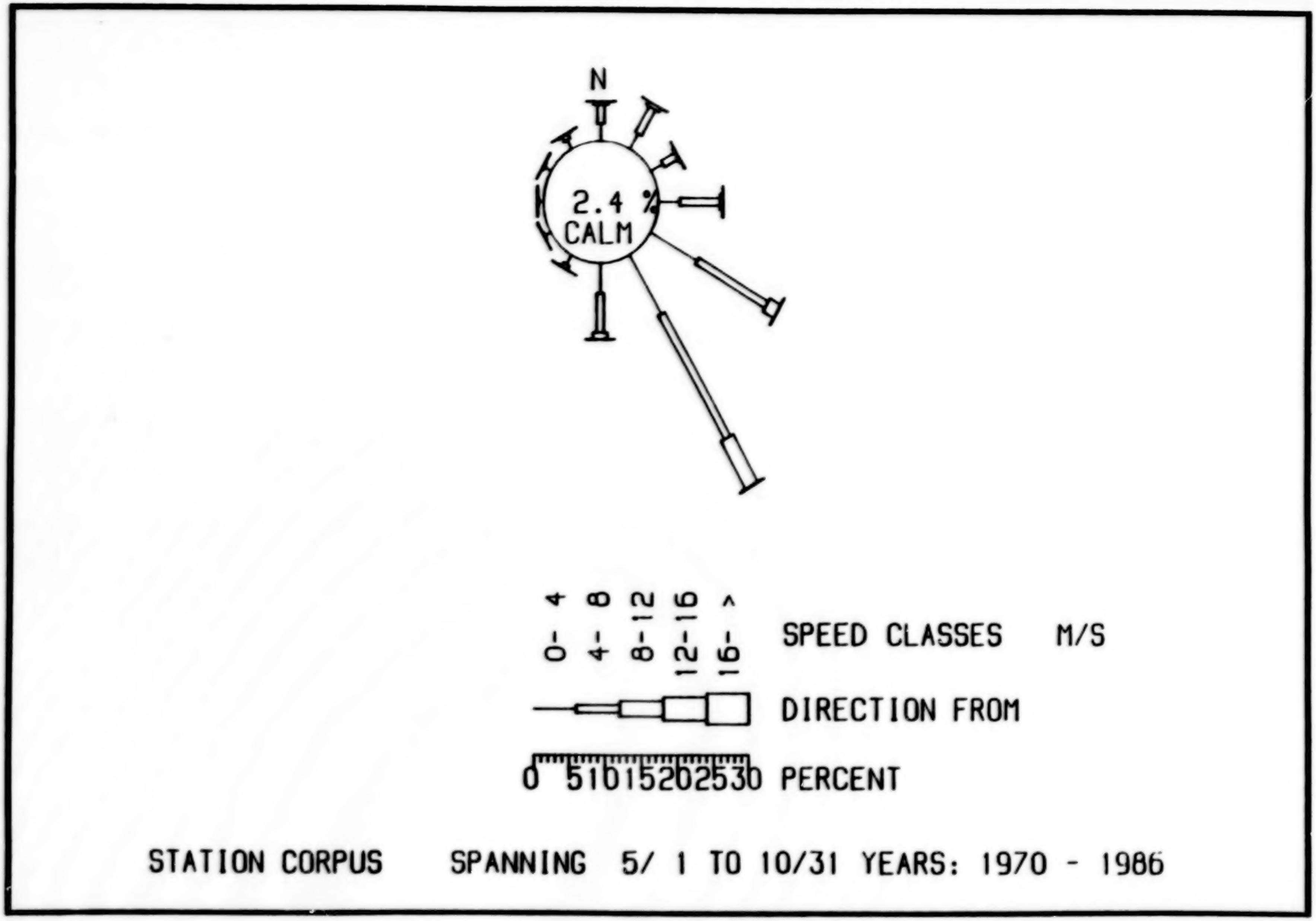
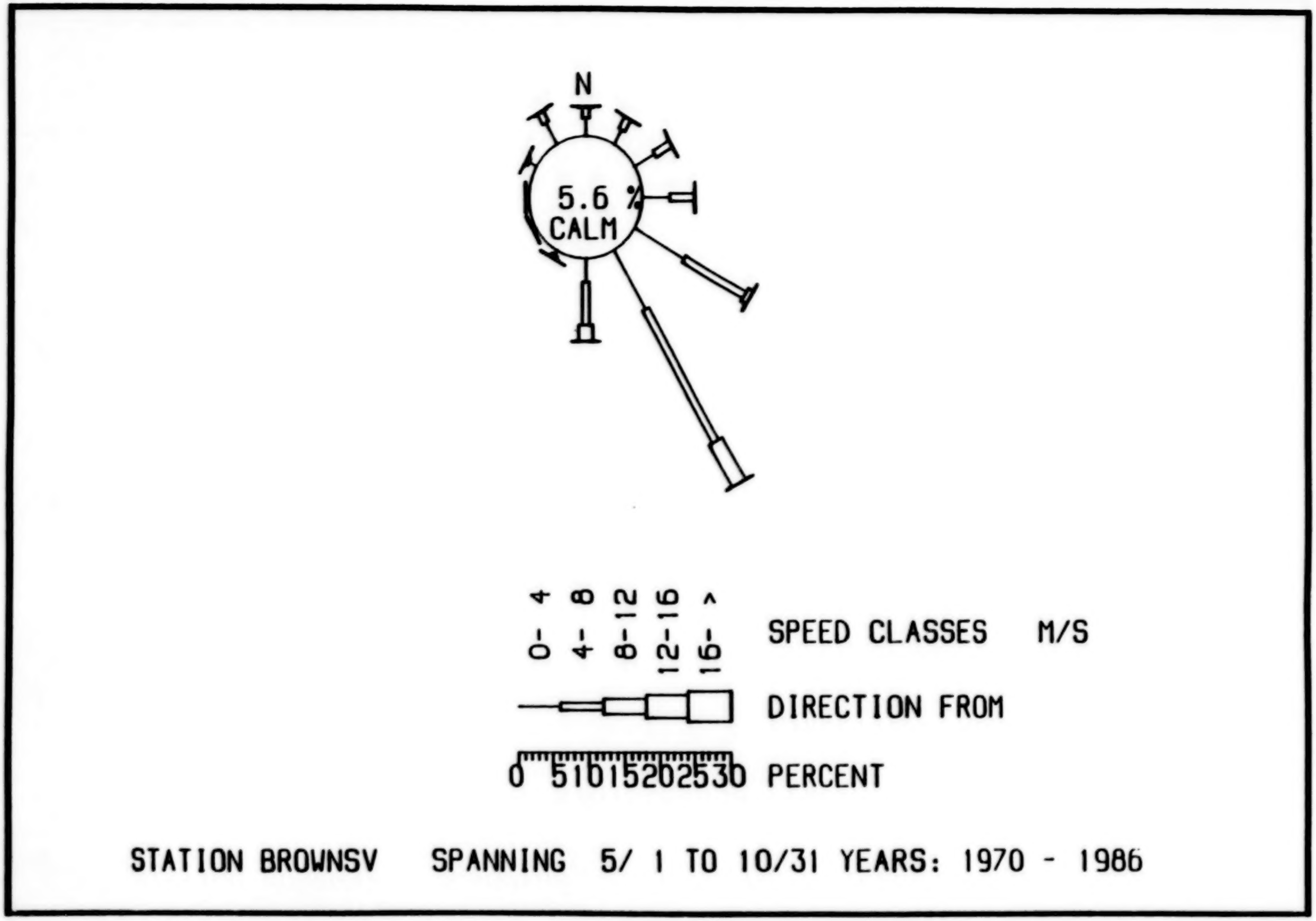


Figure 2.6-5 Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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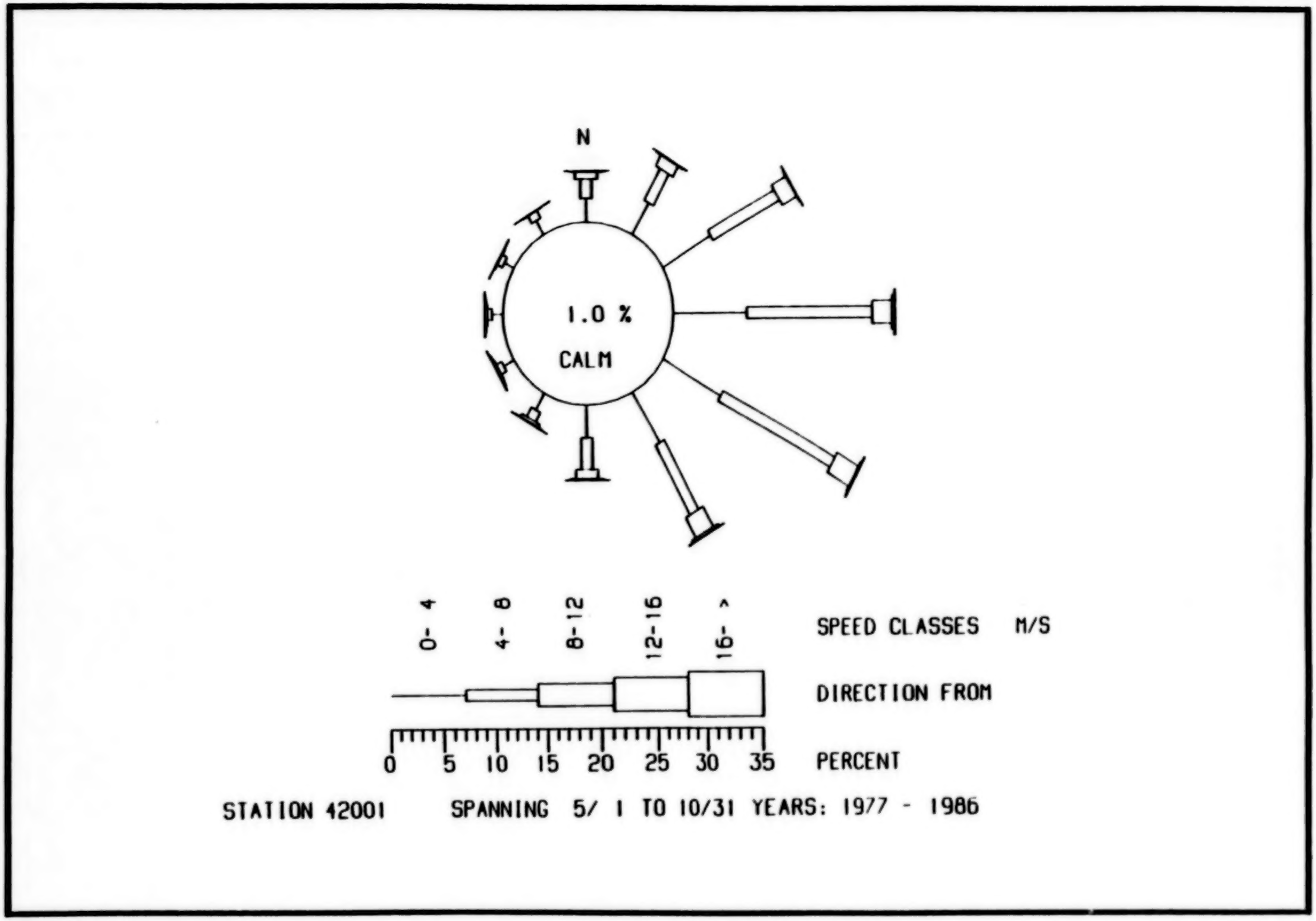


Figure 2.6-5 **Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.**

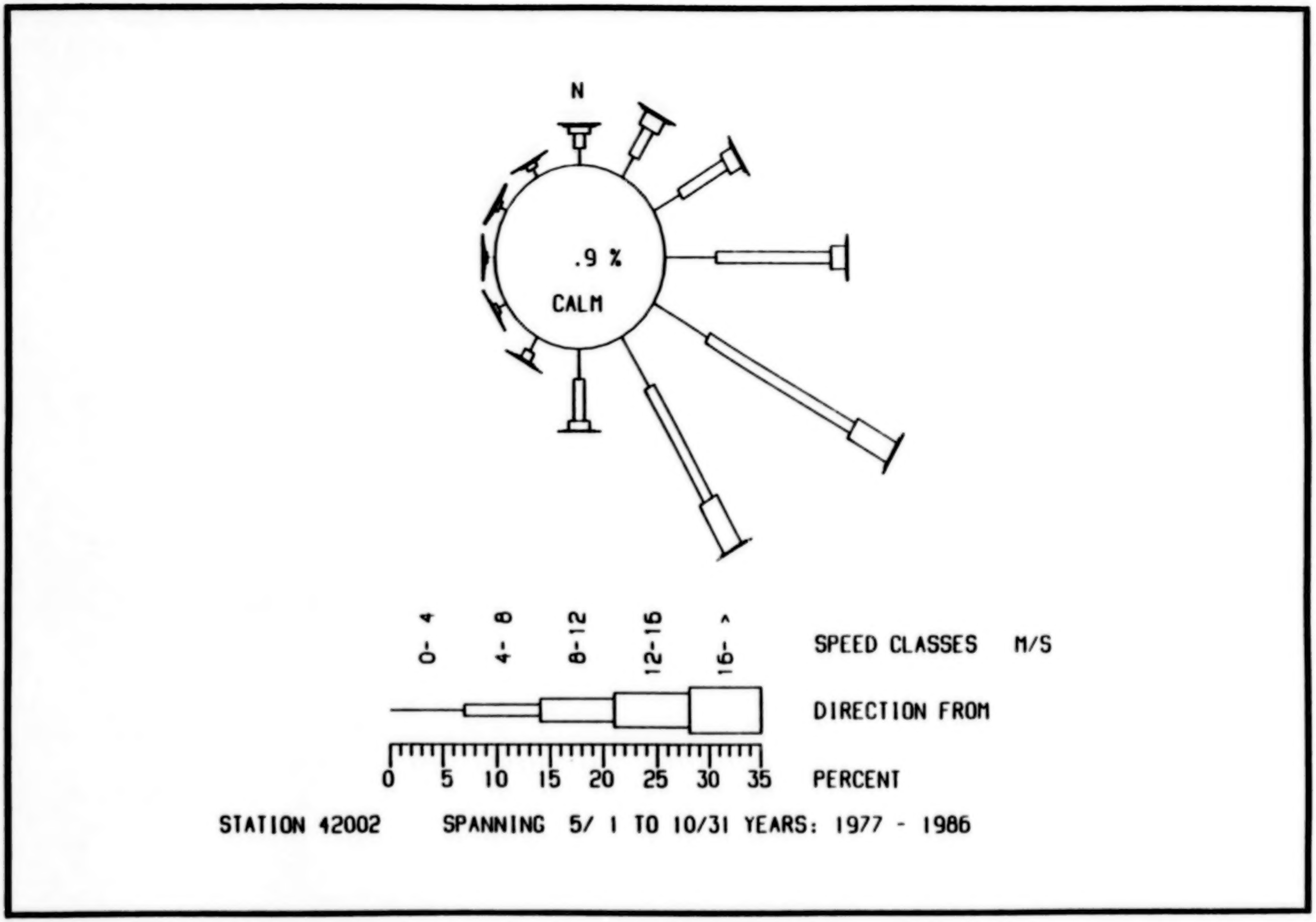


Figure 2.6-5 Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.

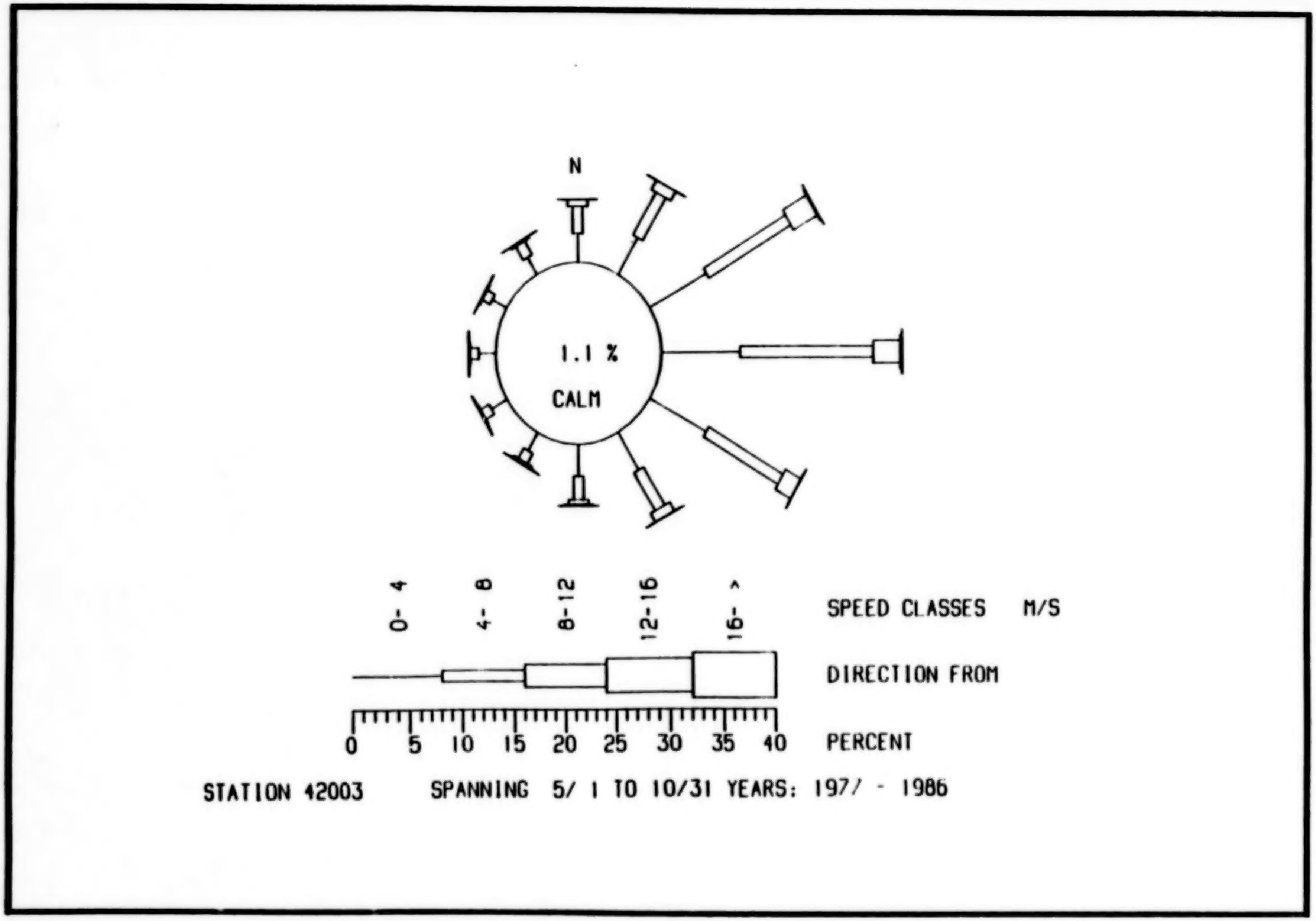


Figure 2.6-5 Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.

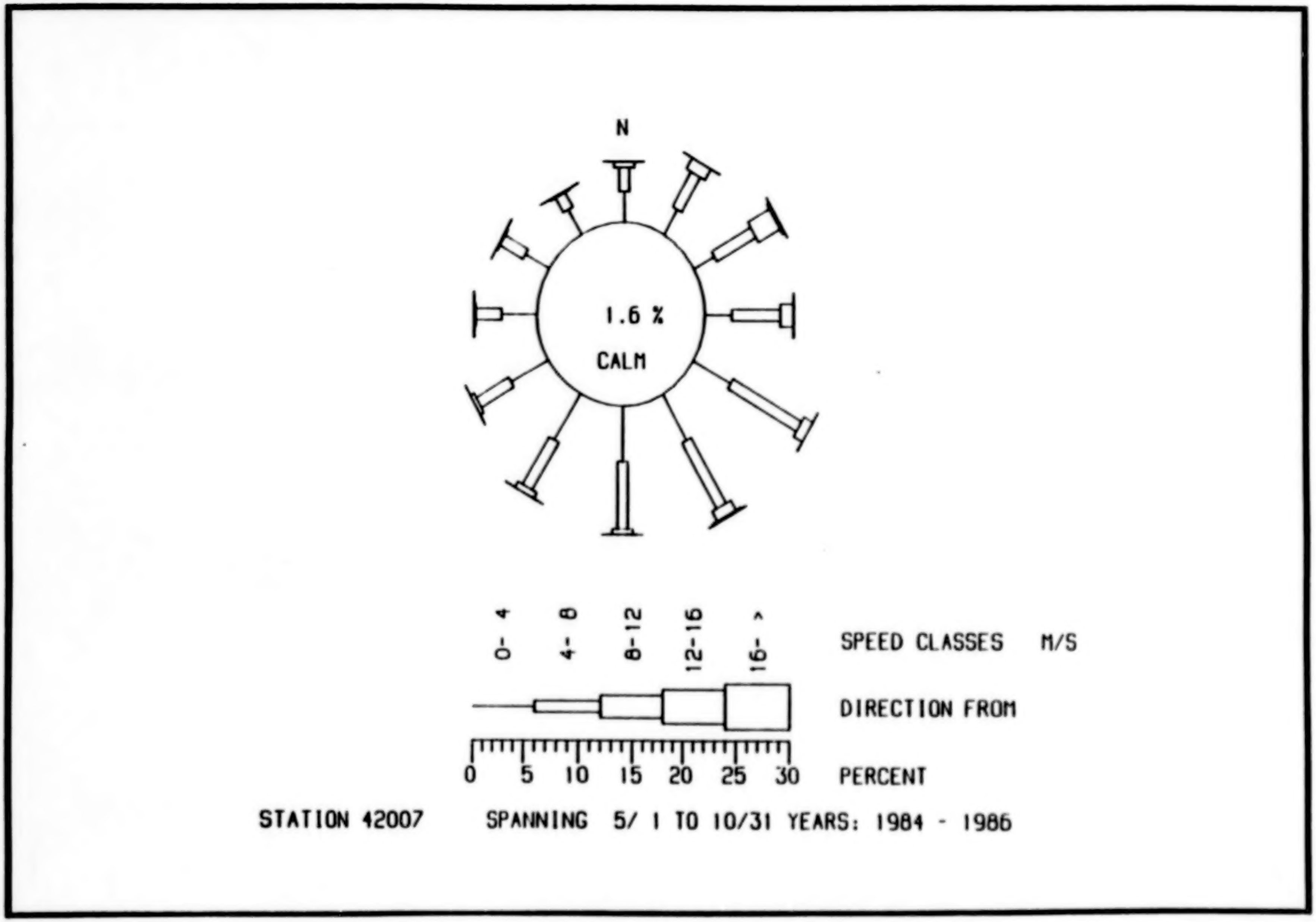
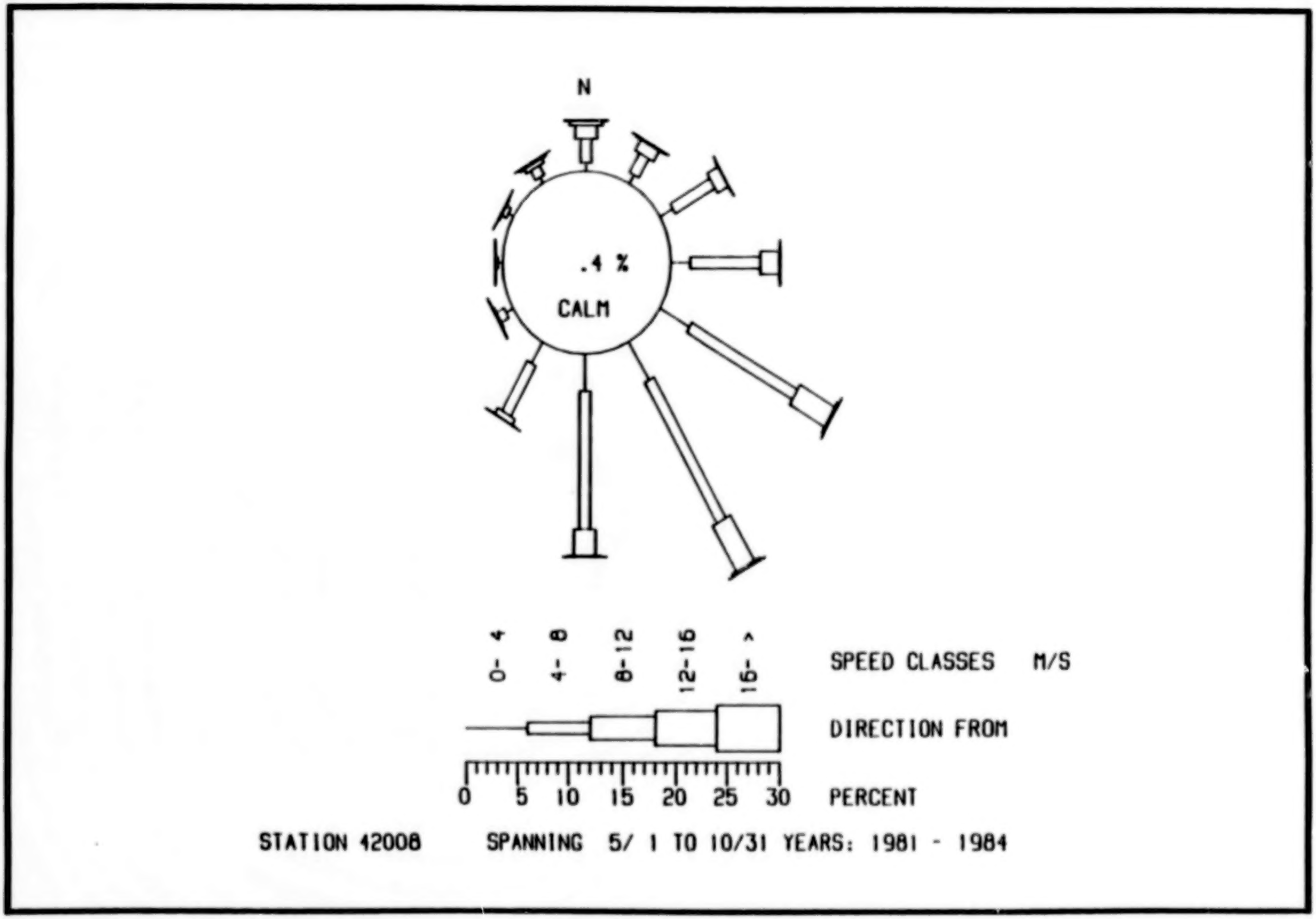


Figure 2.6-5 Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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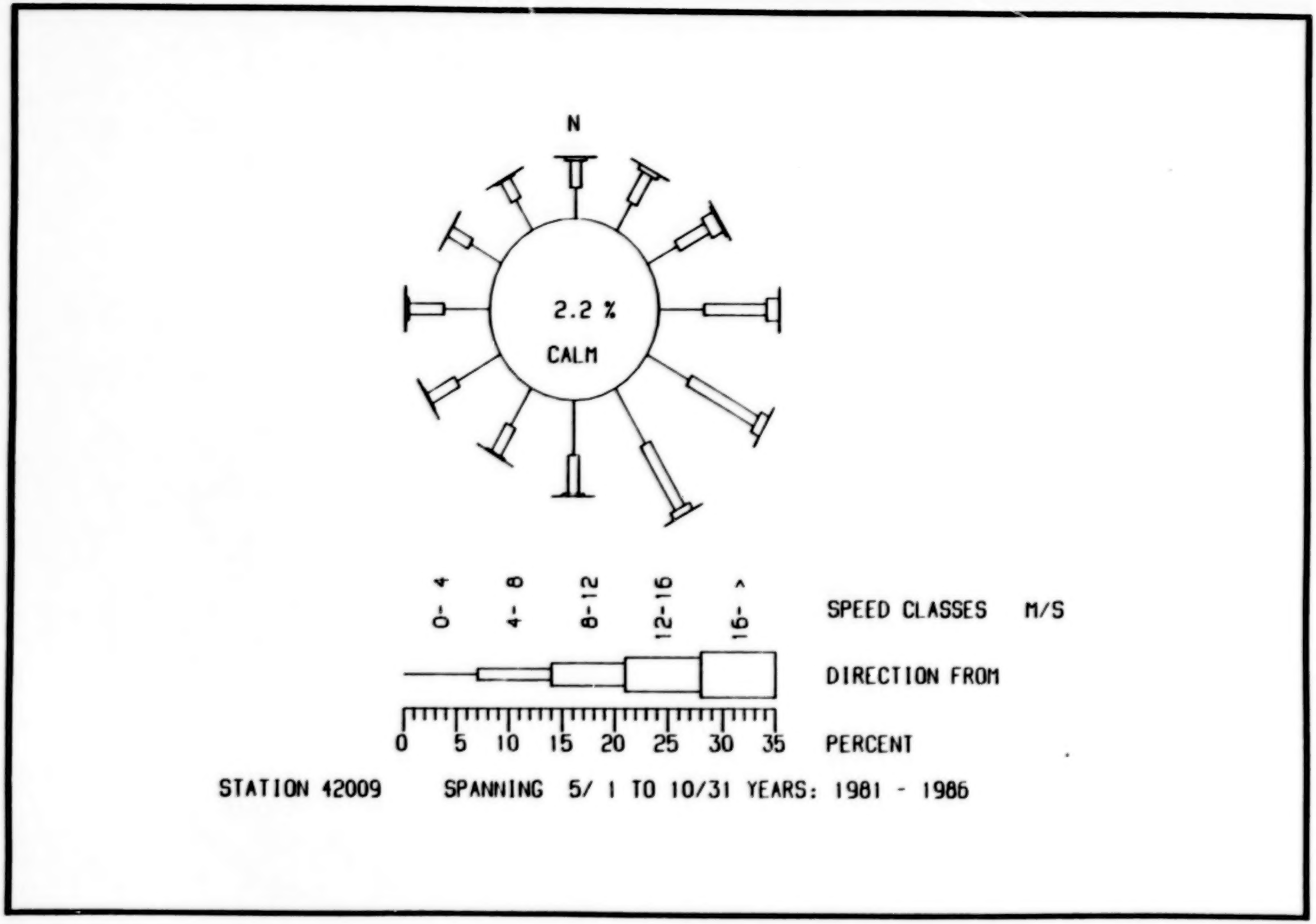

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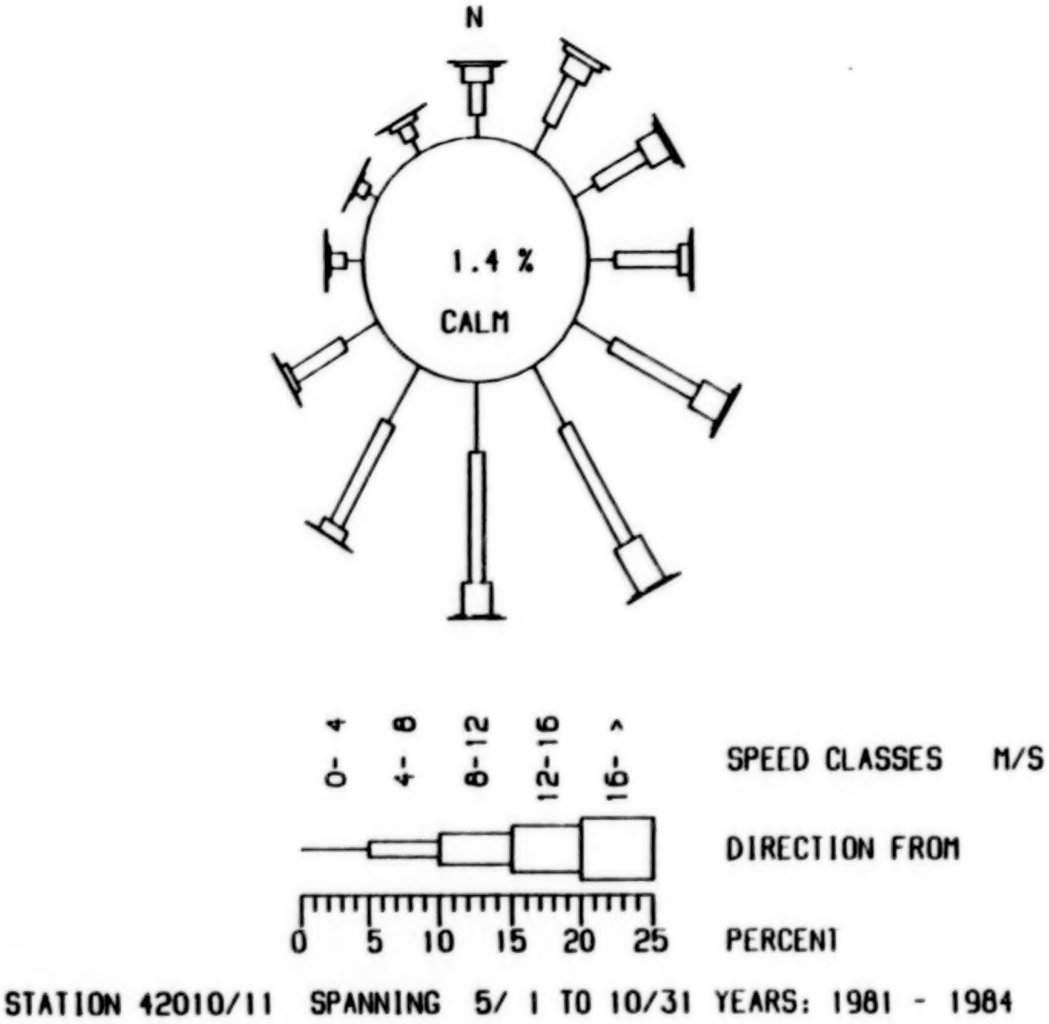

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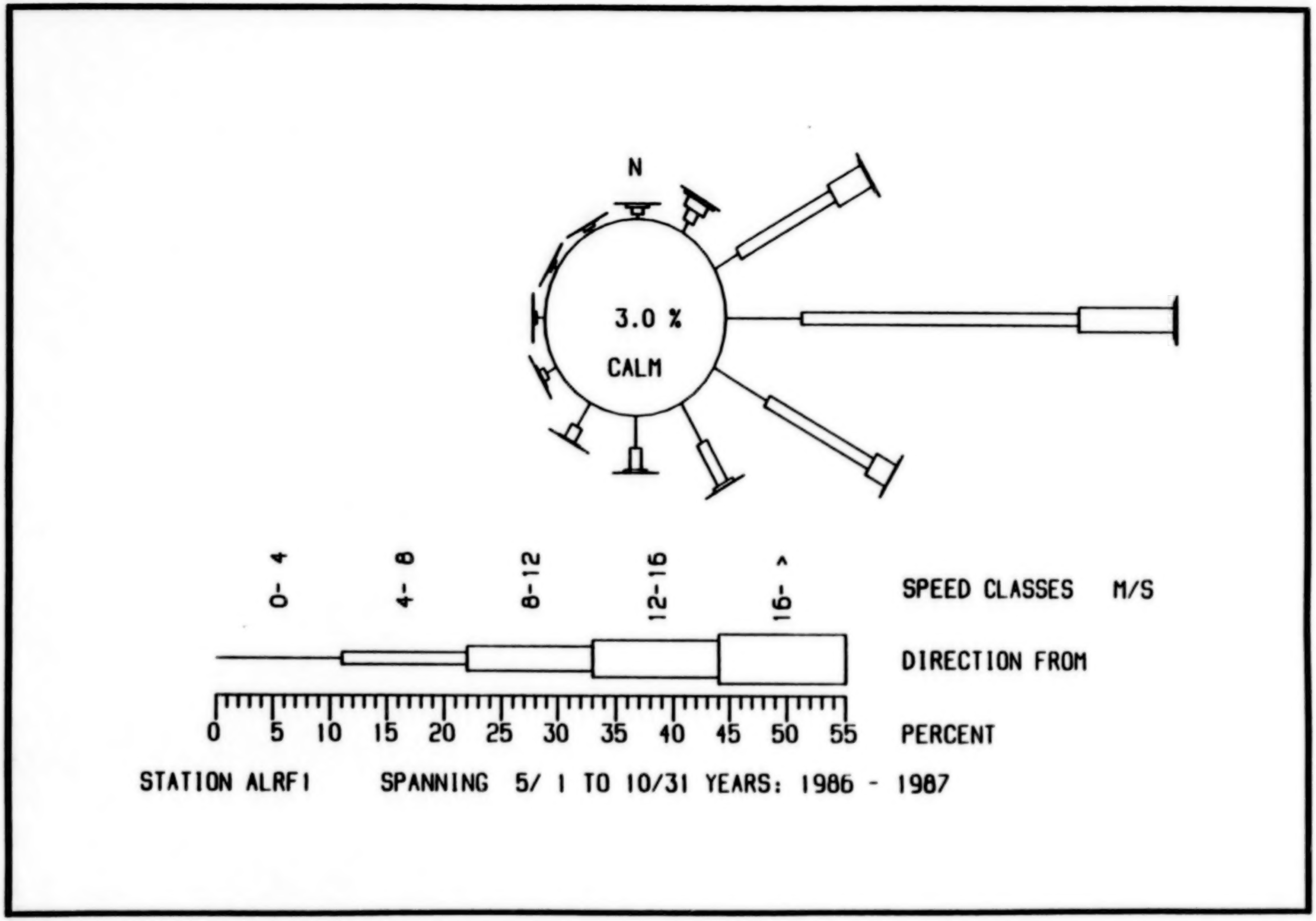

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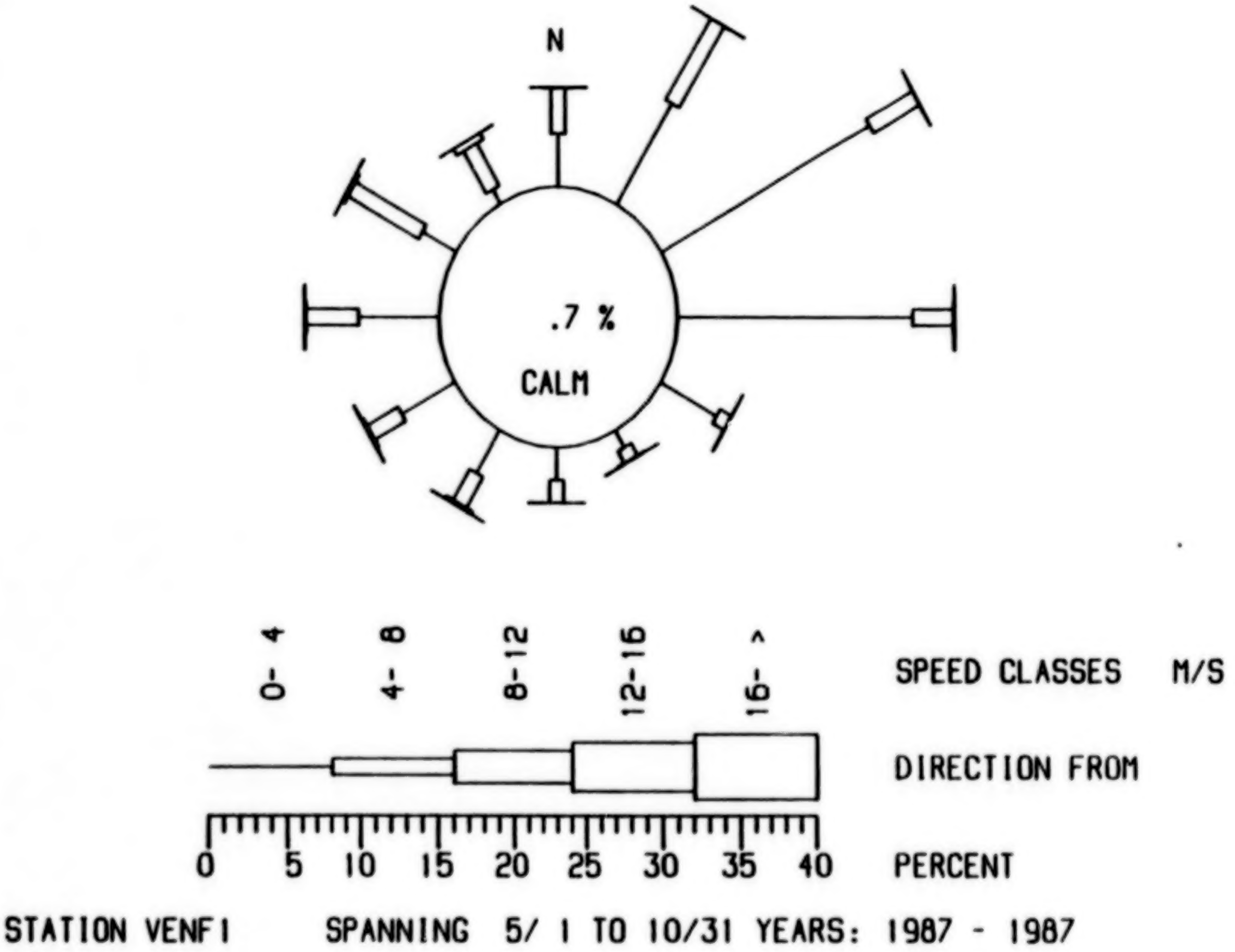

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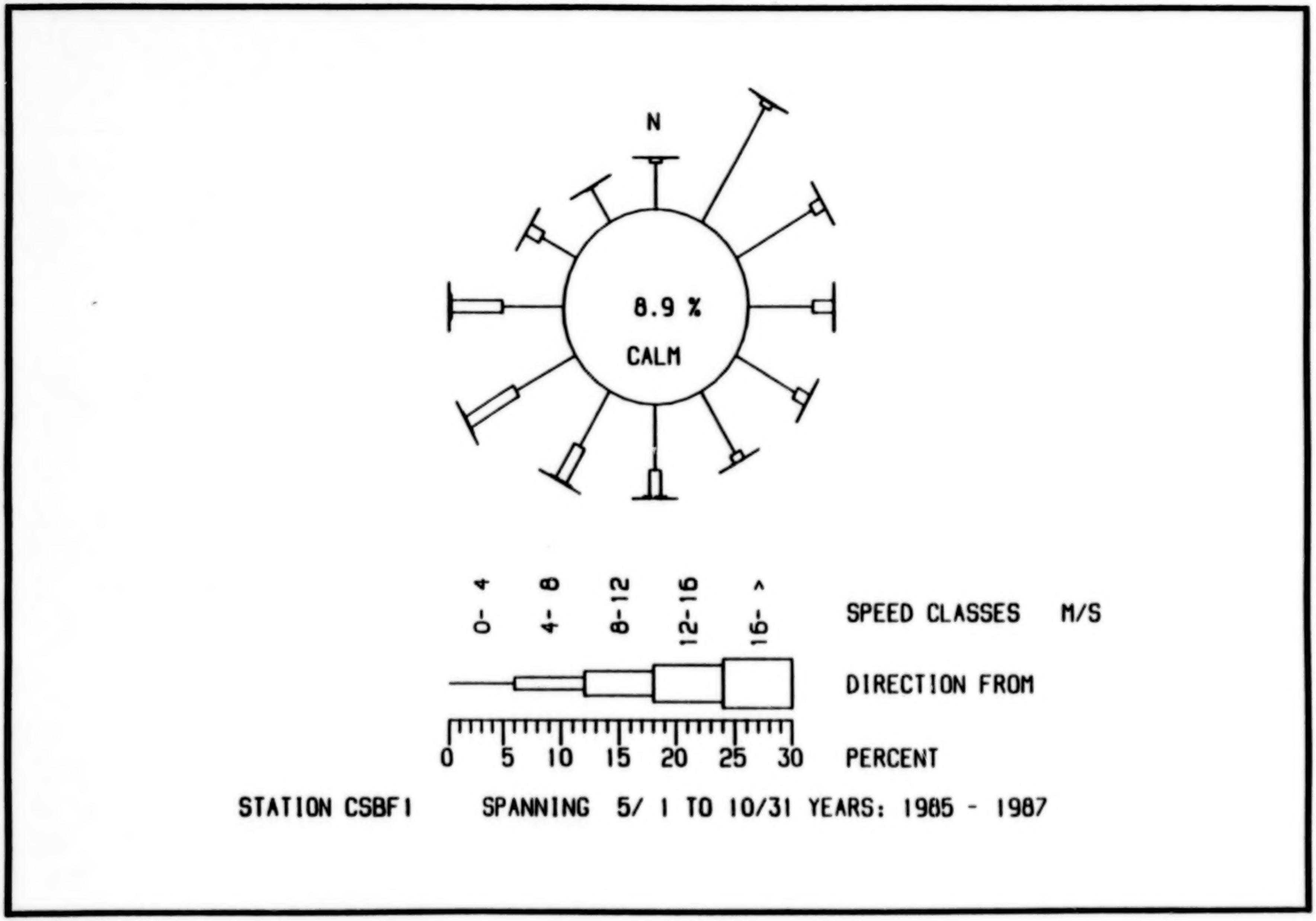

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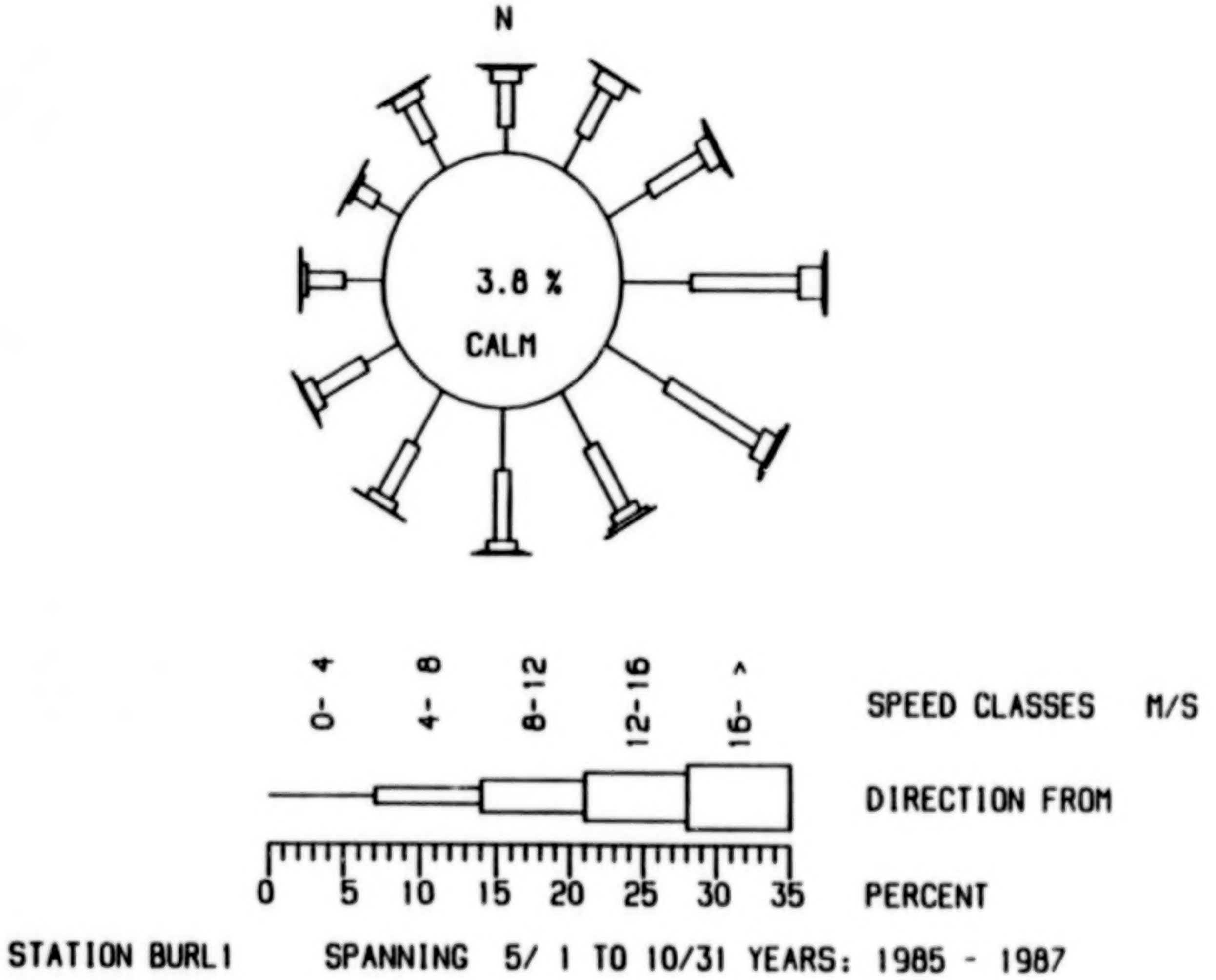

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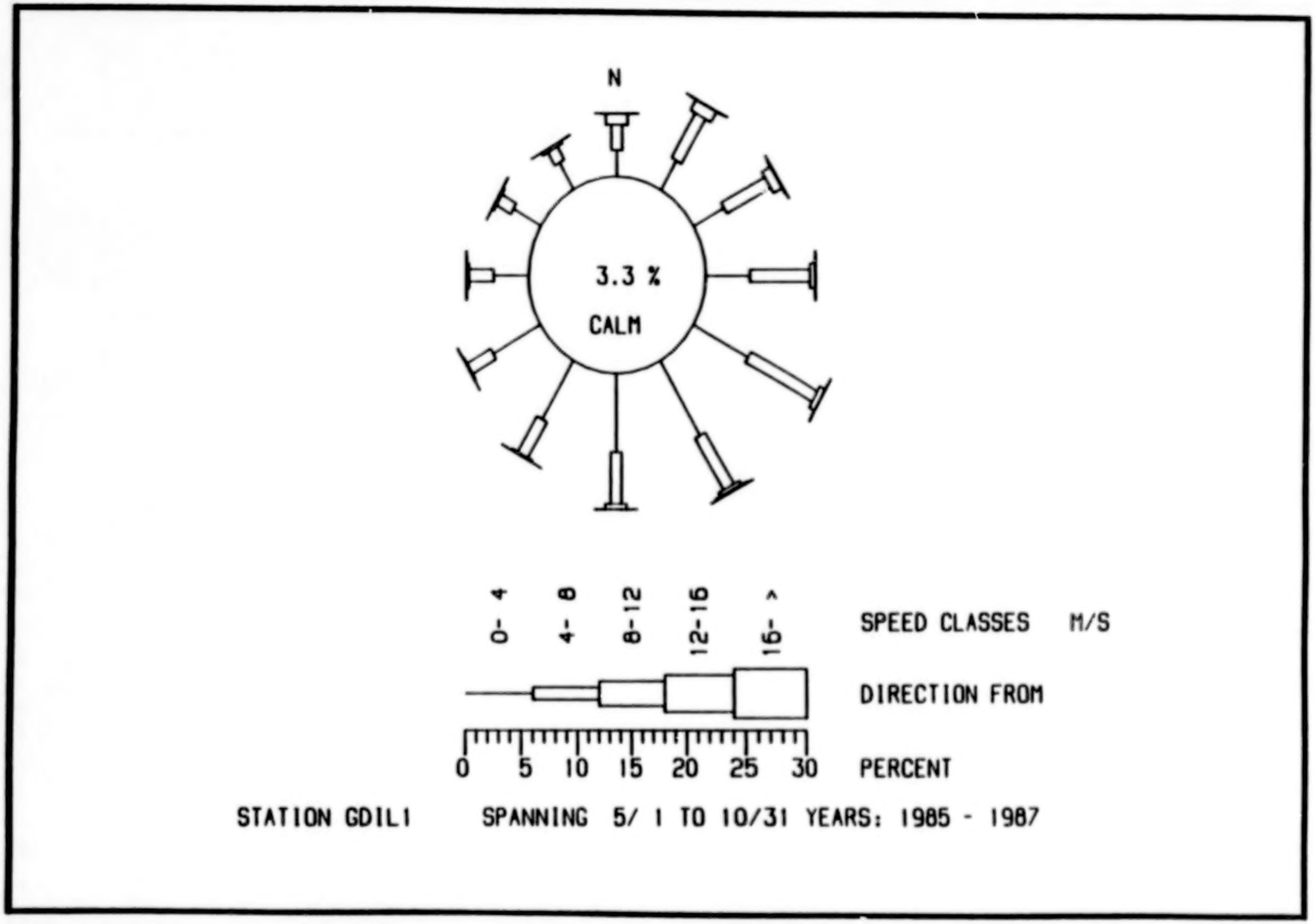
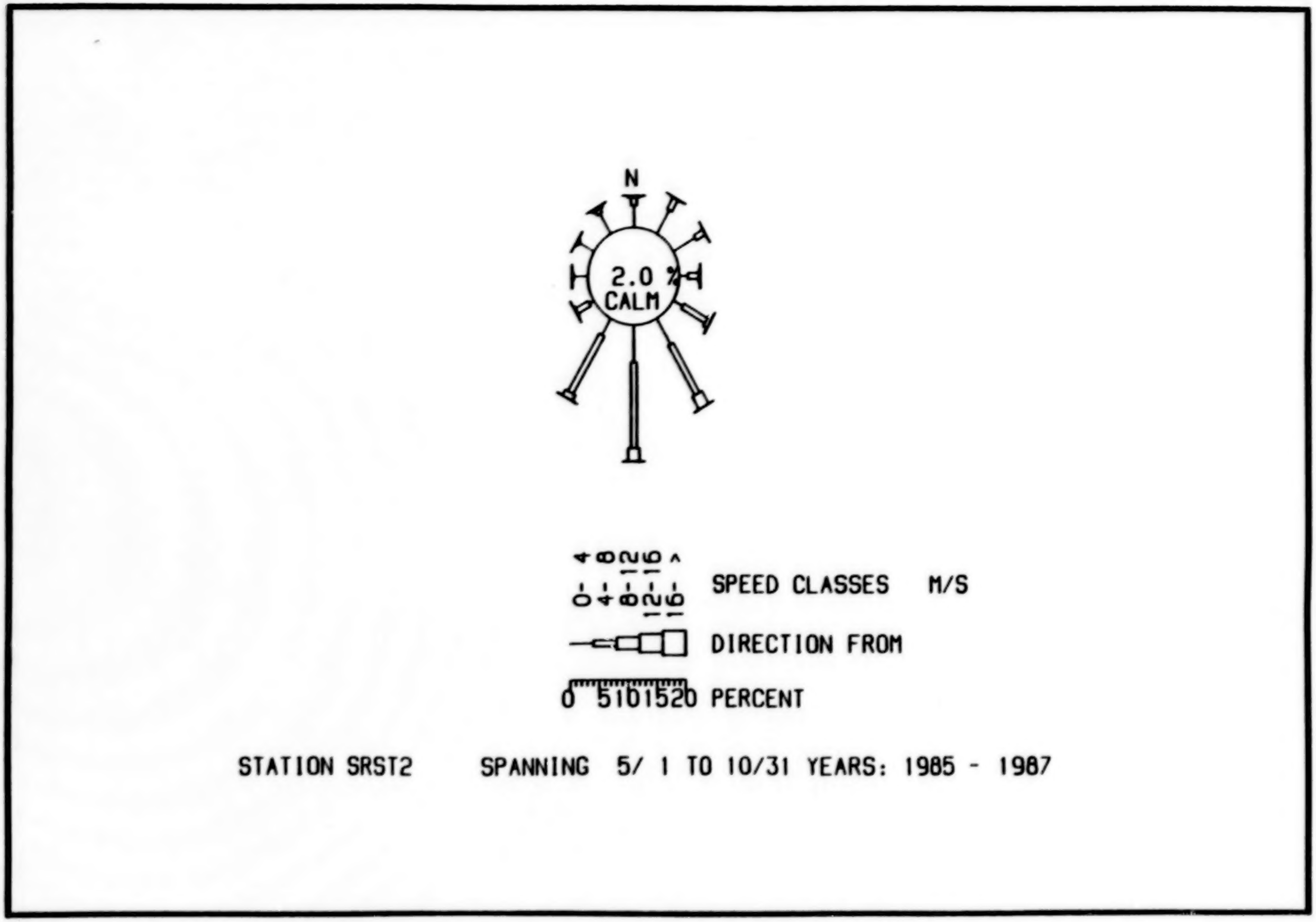


Figure 2.6-5 Summer seasonal wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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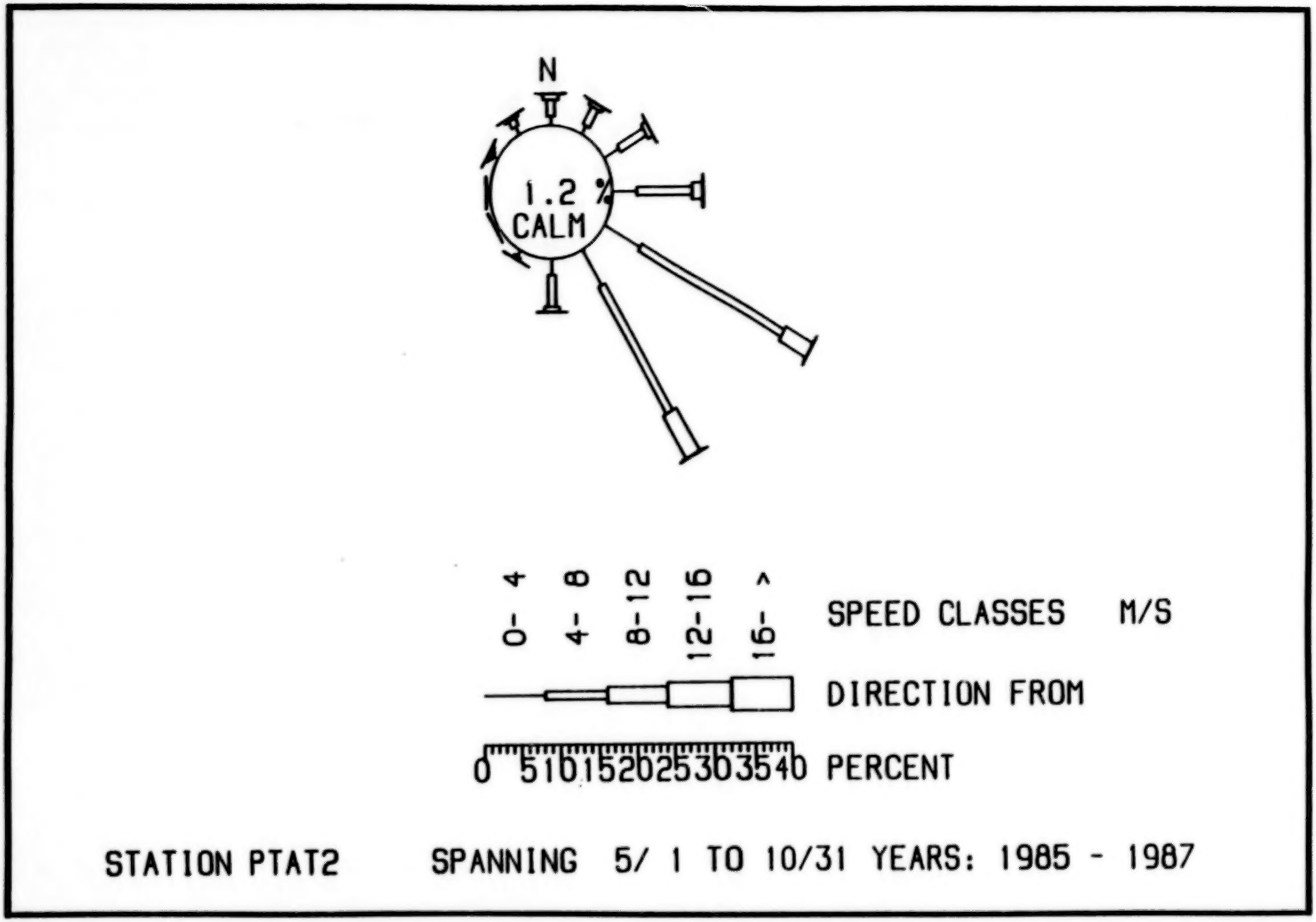

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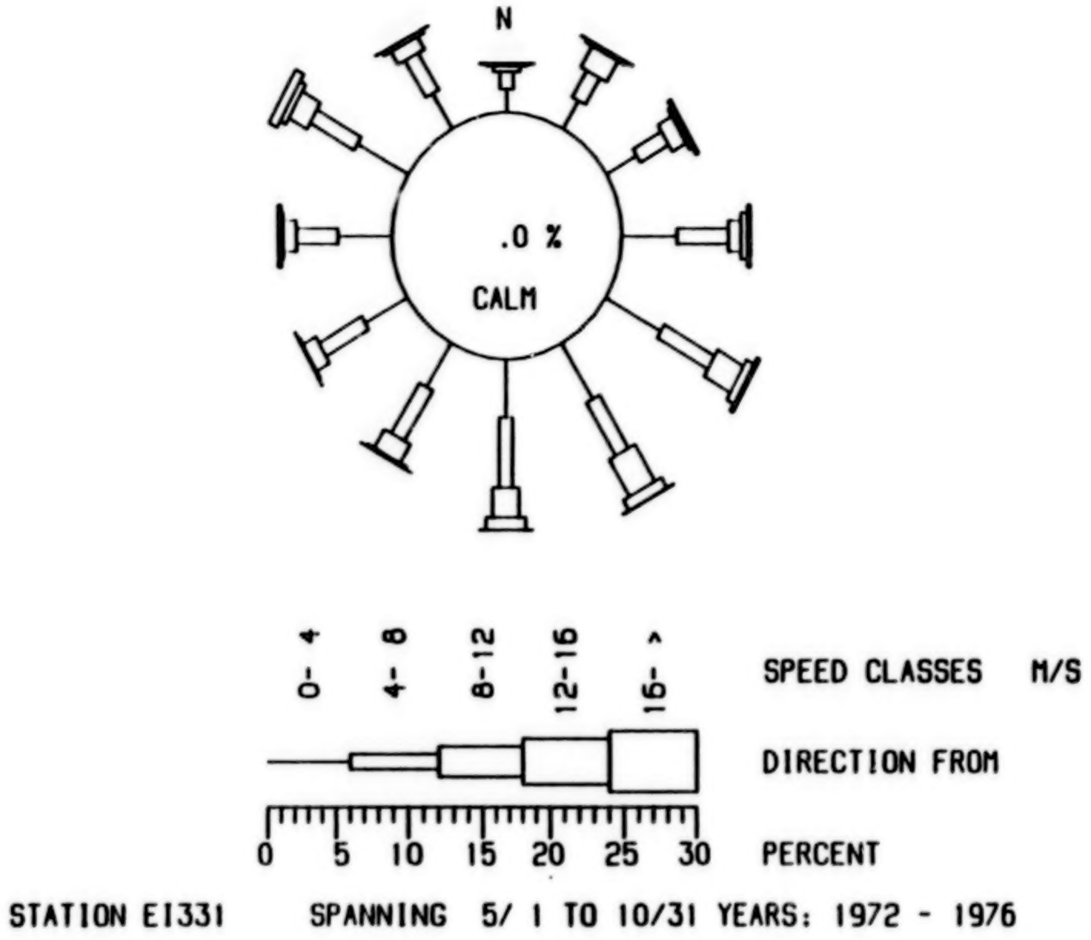

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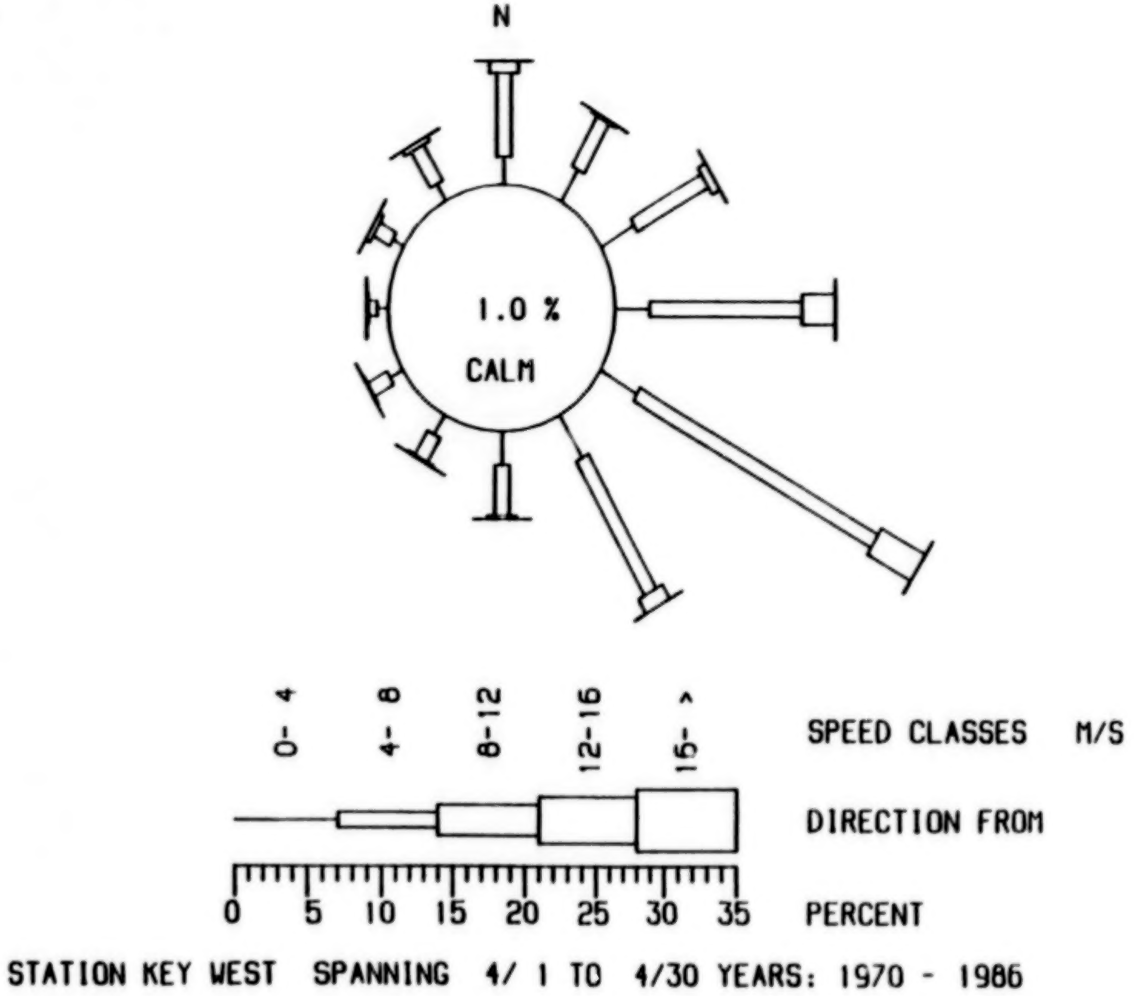
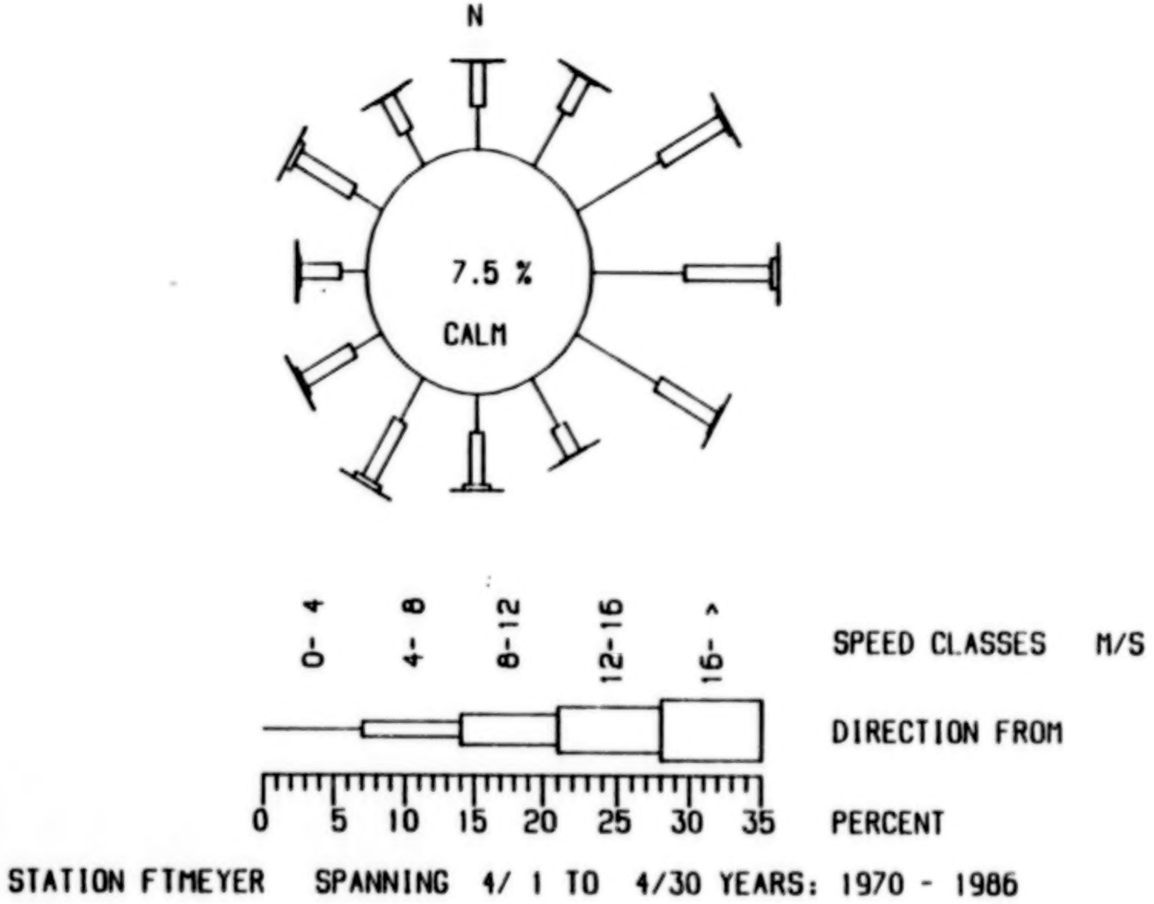


Figure 2.6-6 April transitional season wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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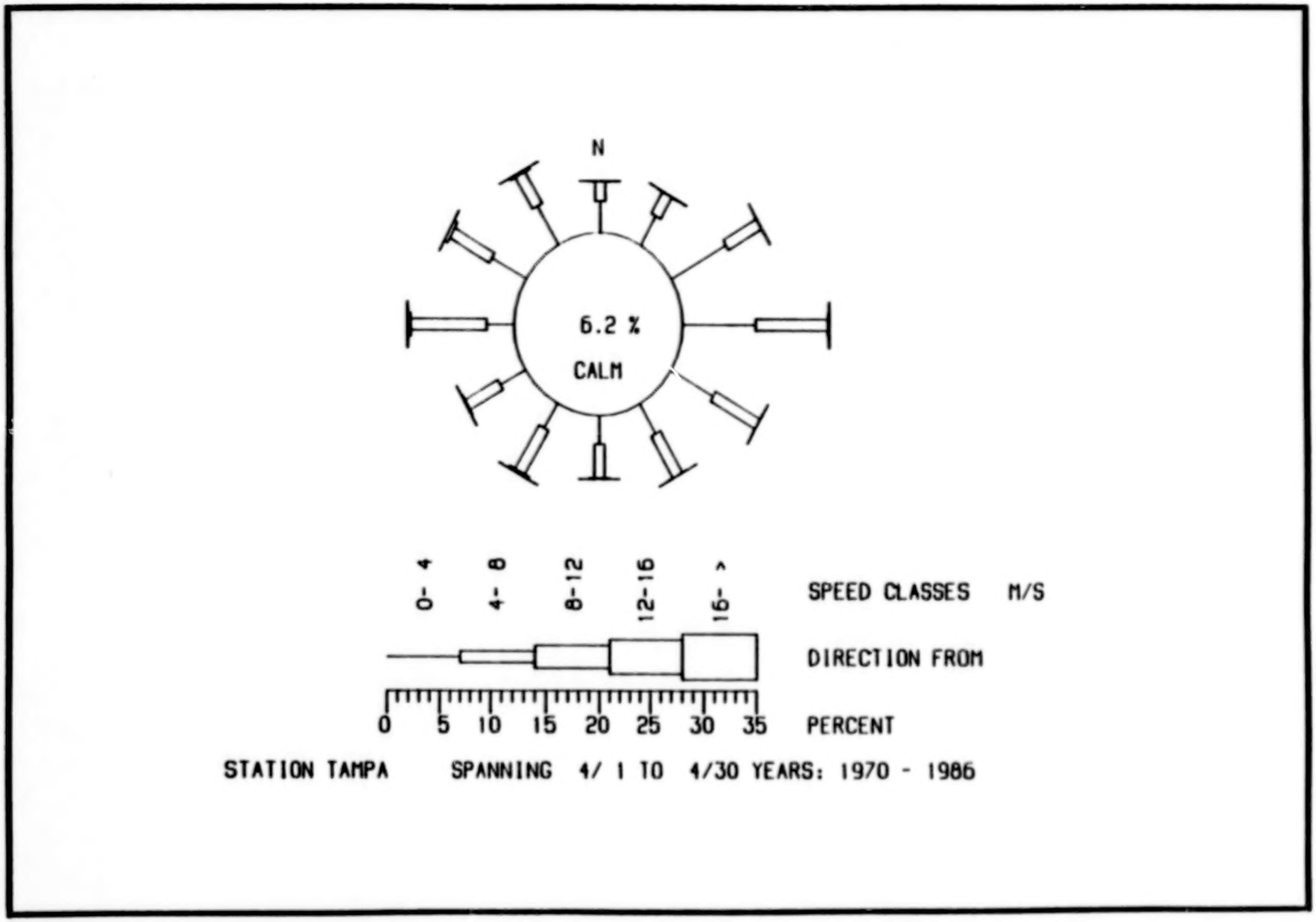

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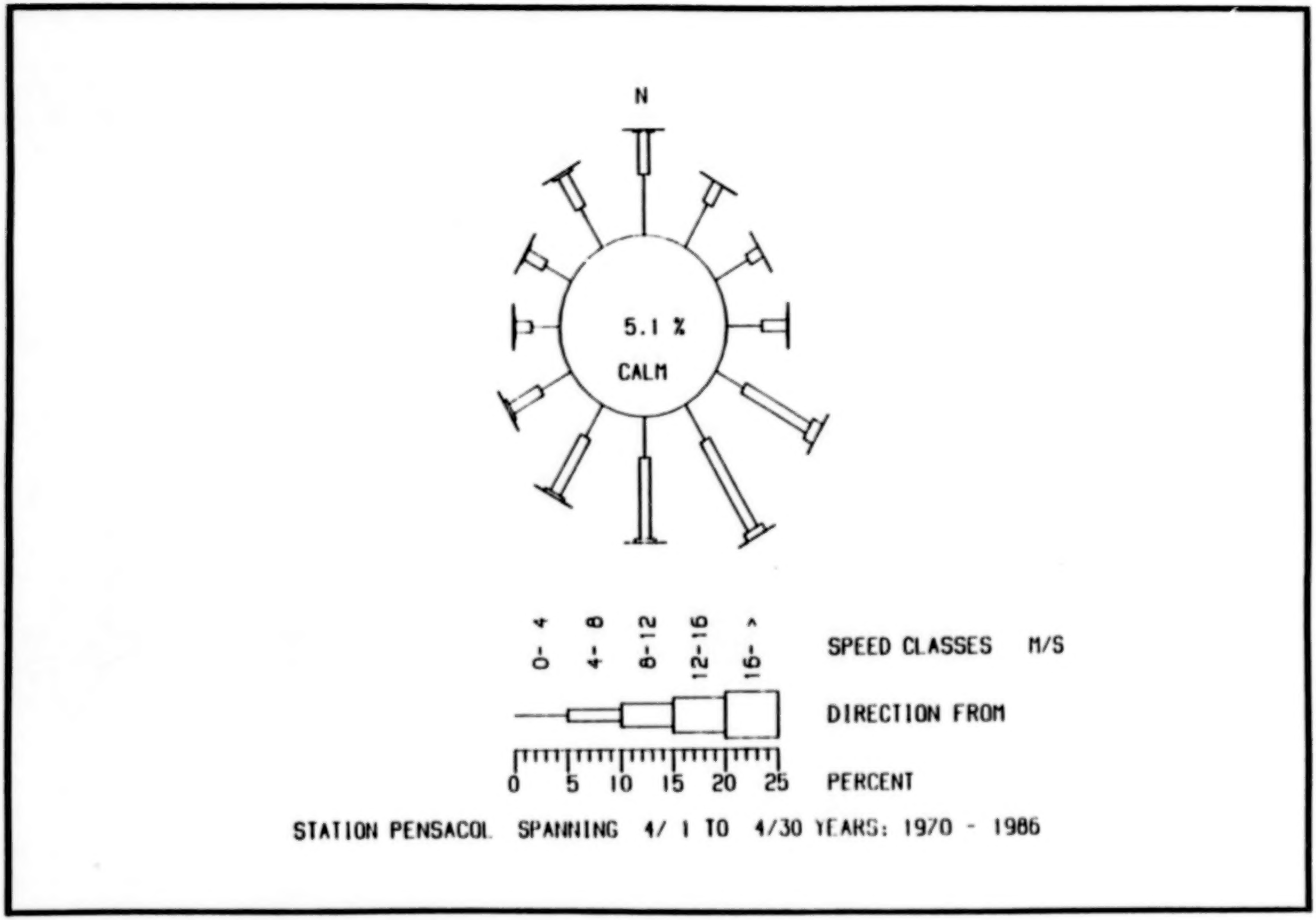

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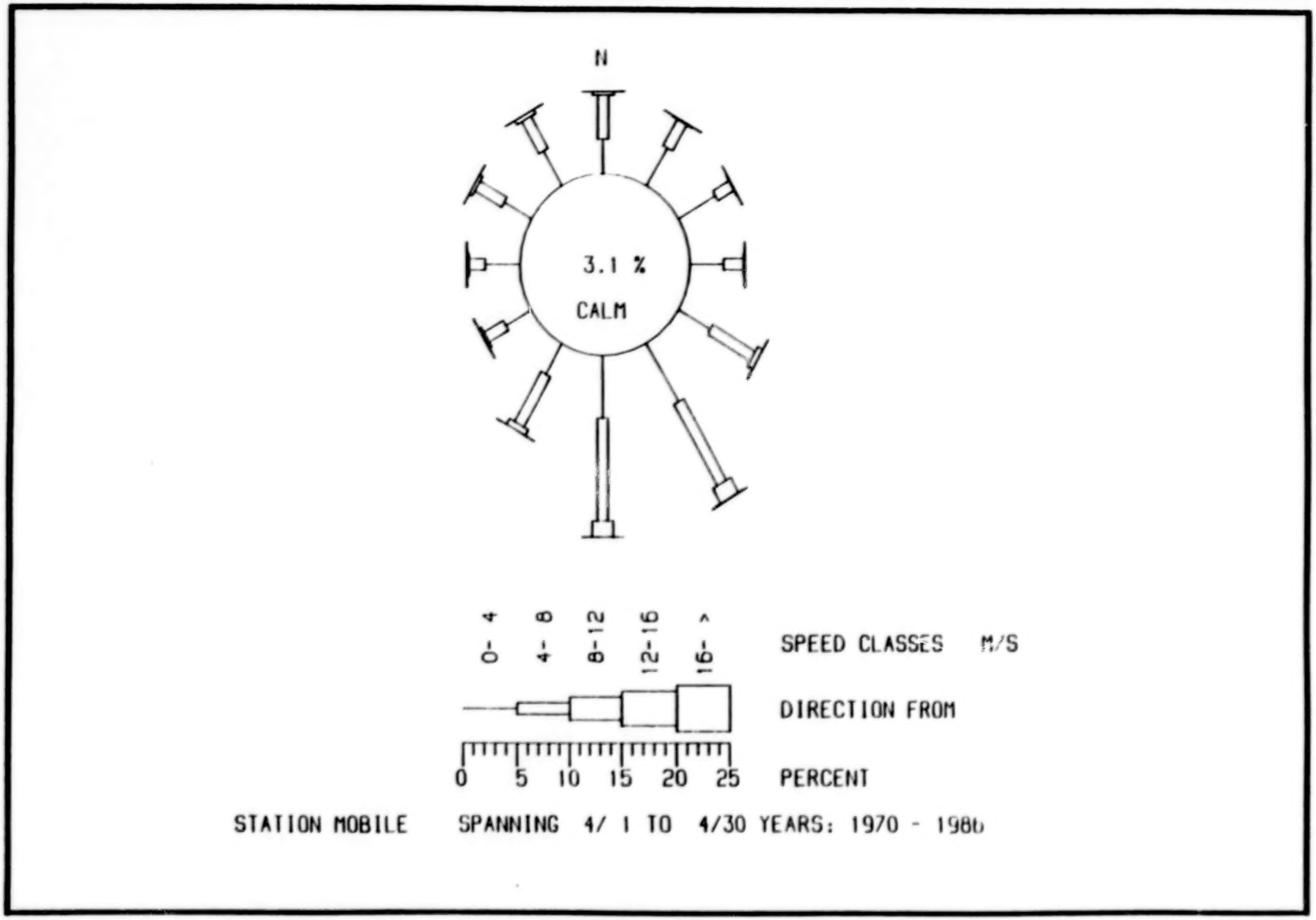

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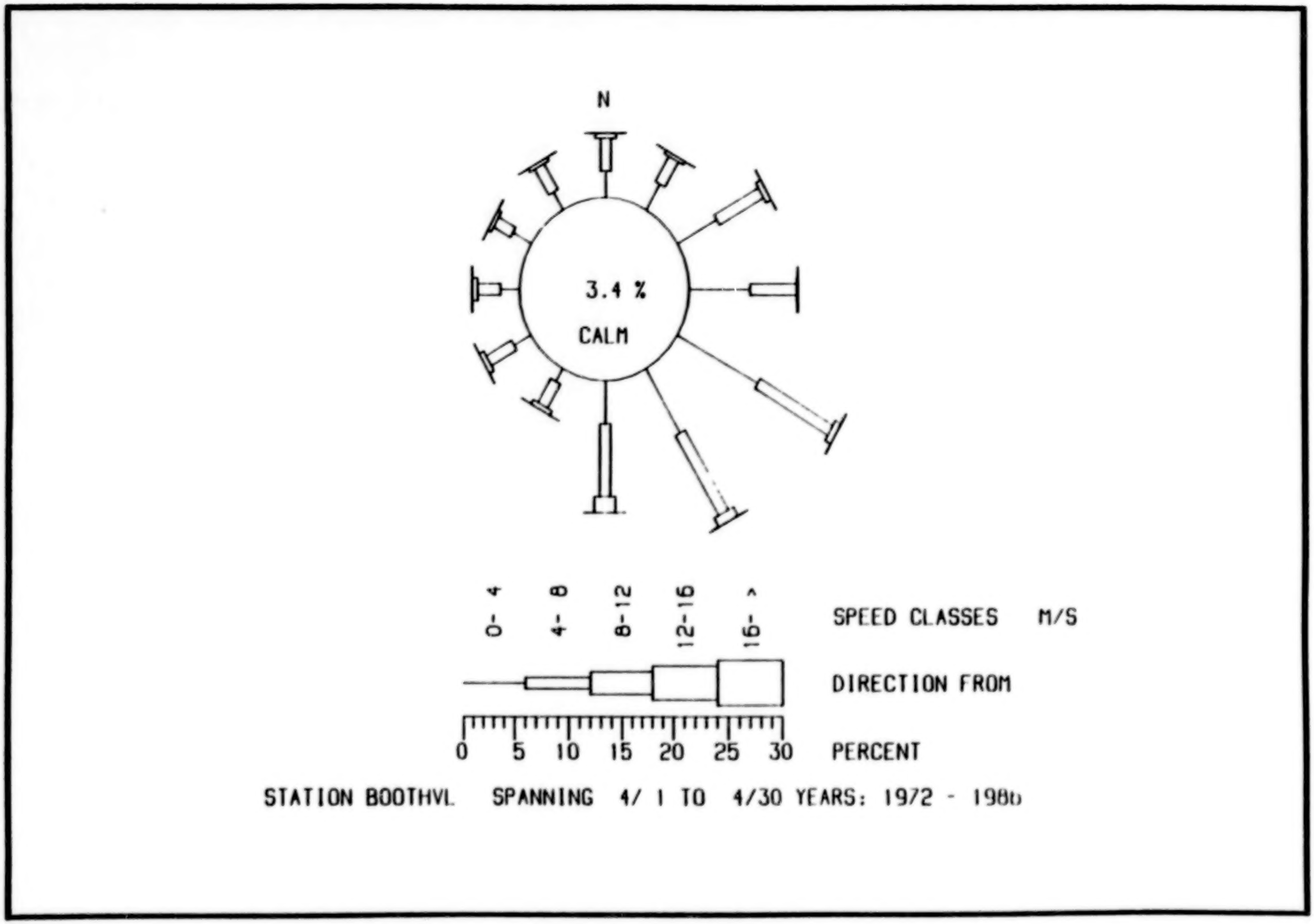

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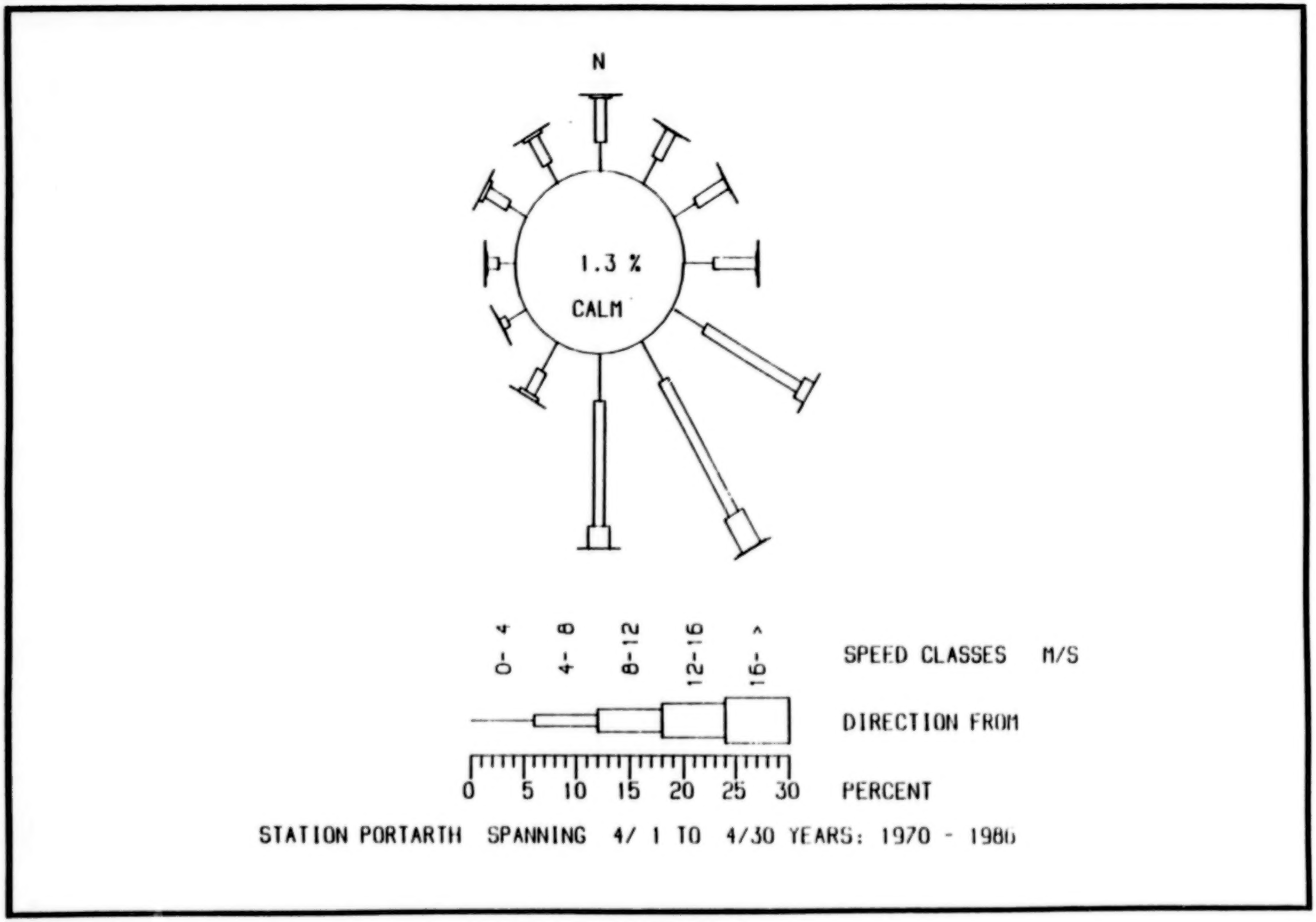
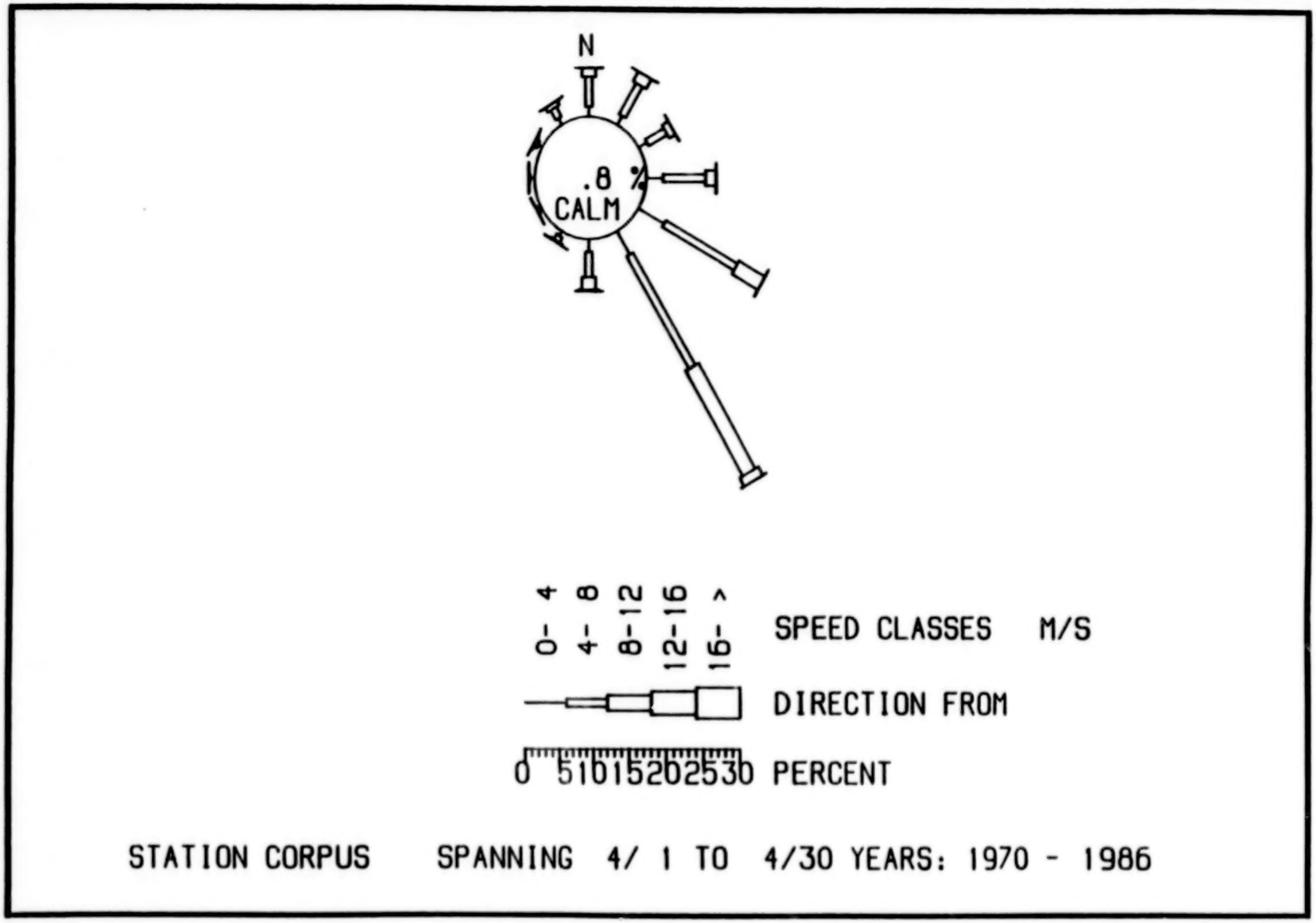


Figure 2.6-6 April transitional season wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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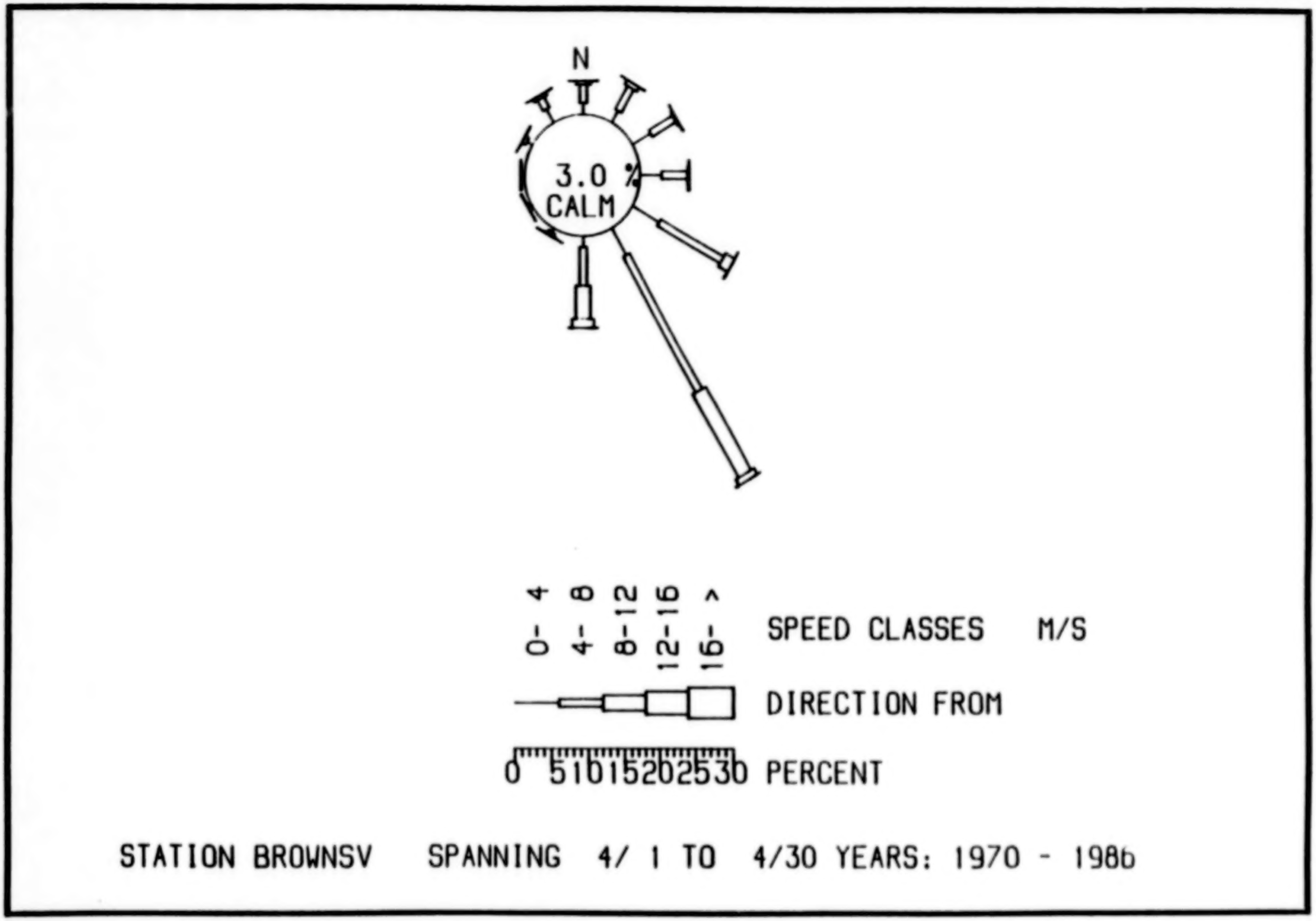

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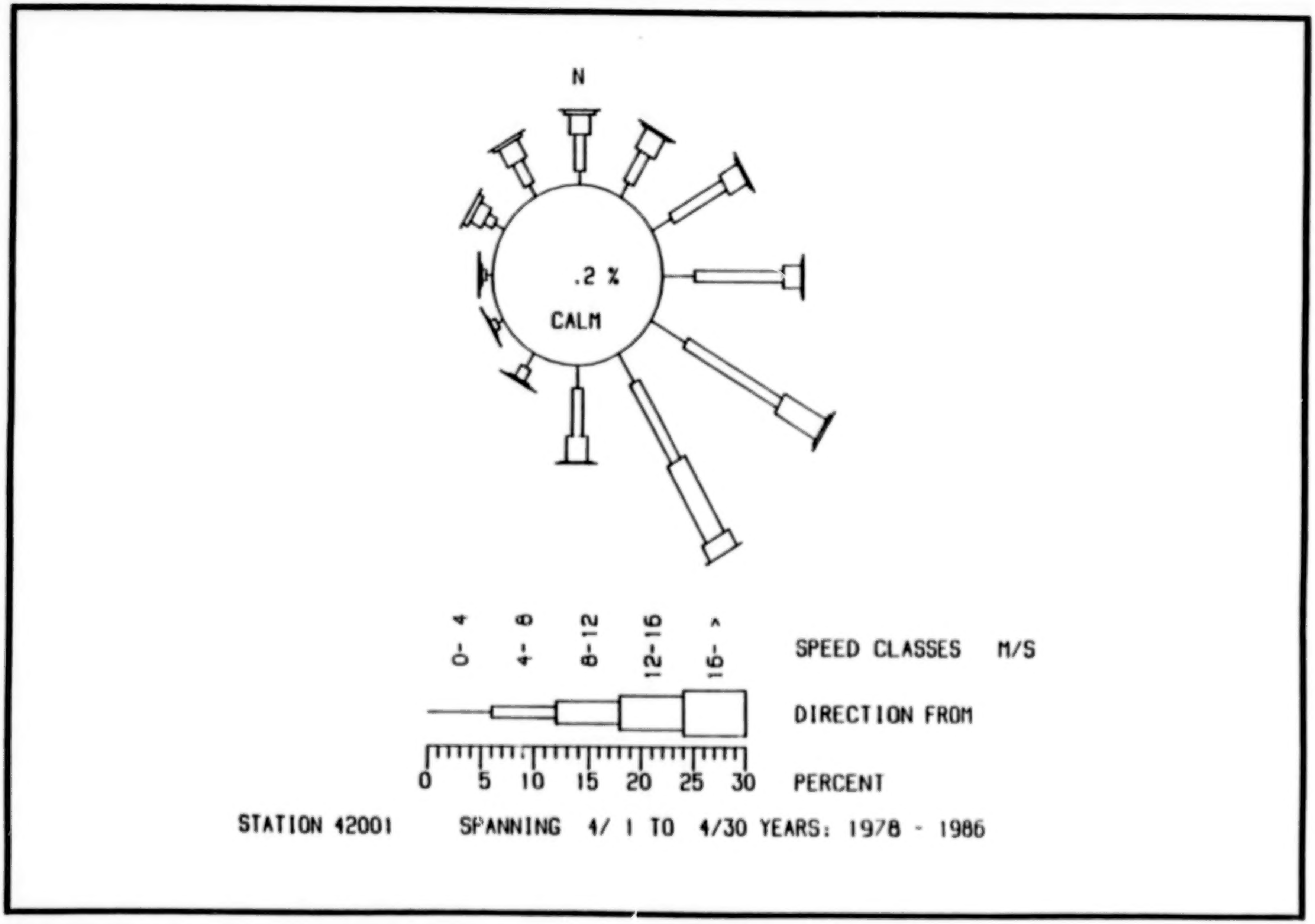

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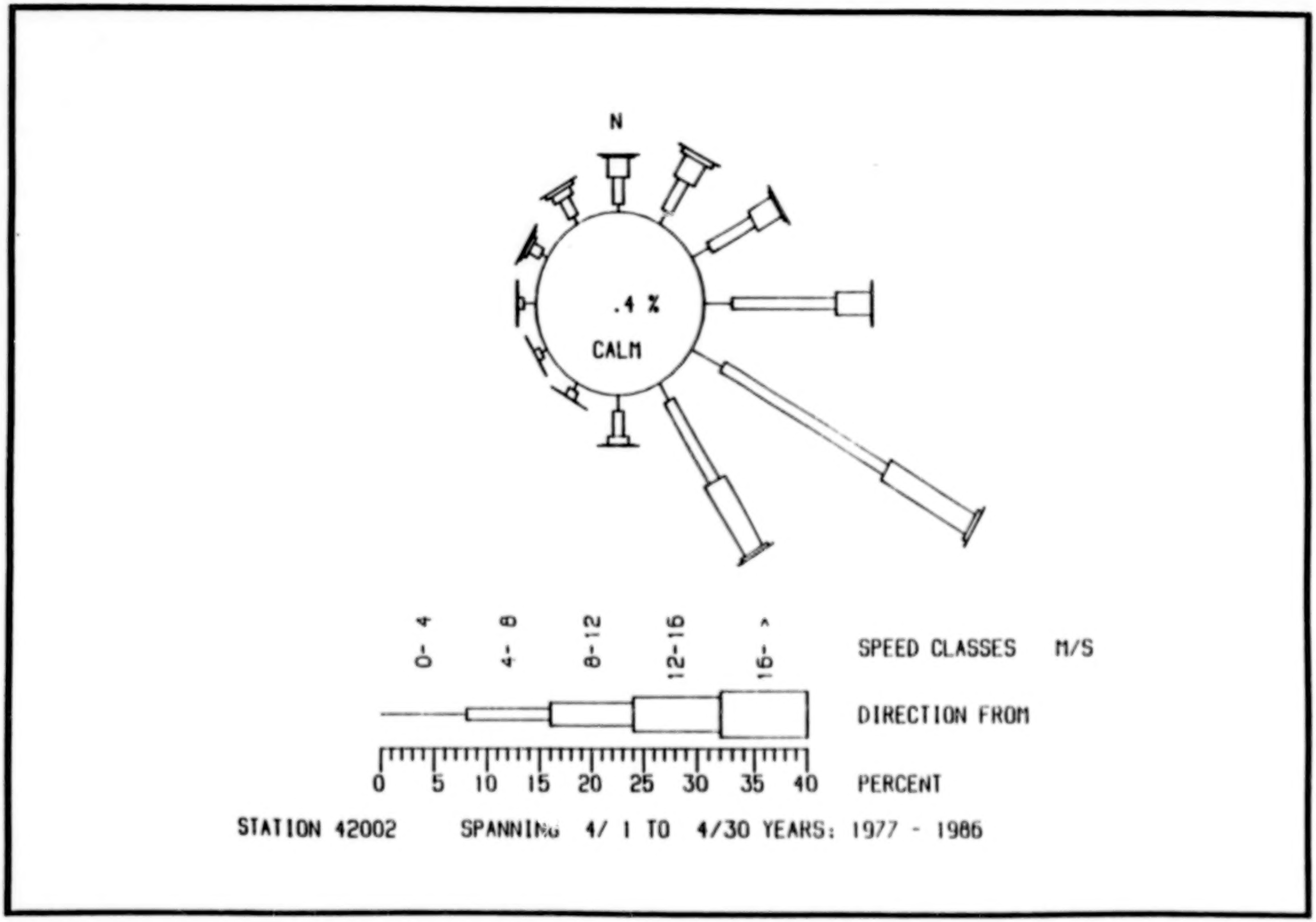

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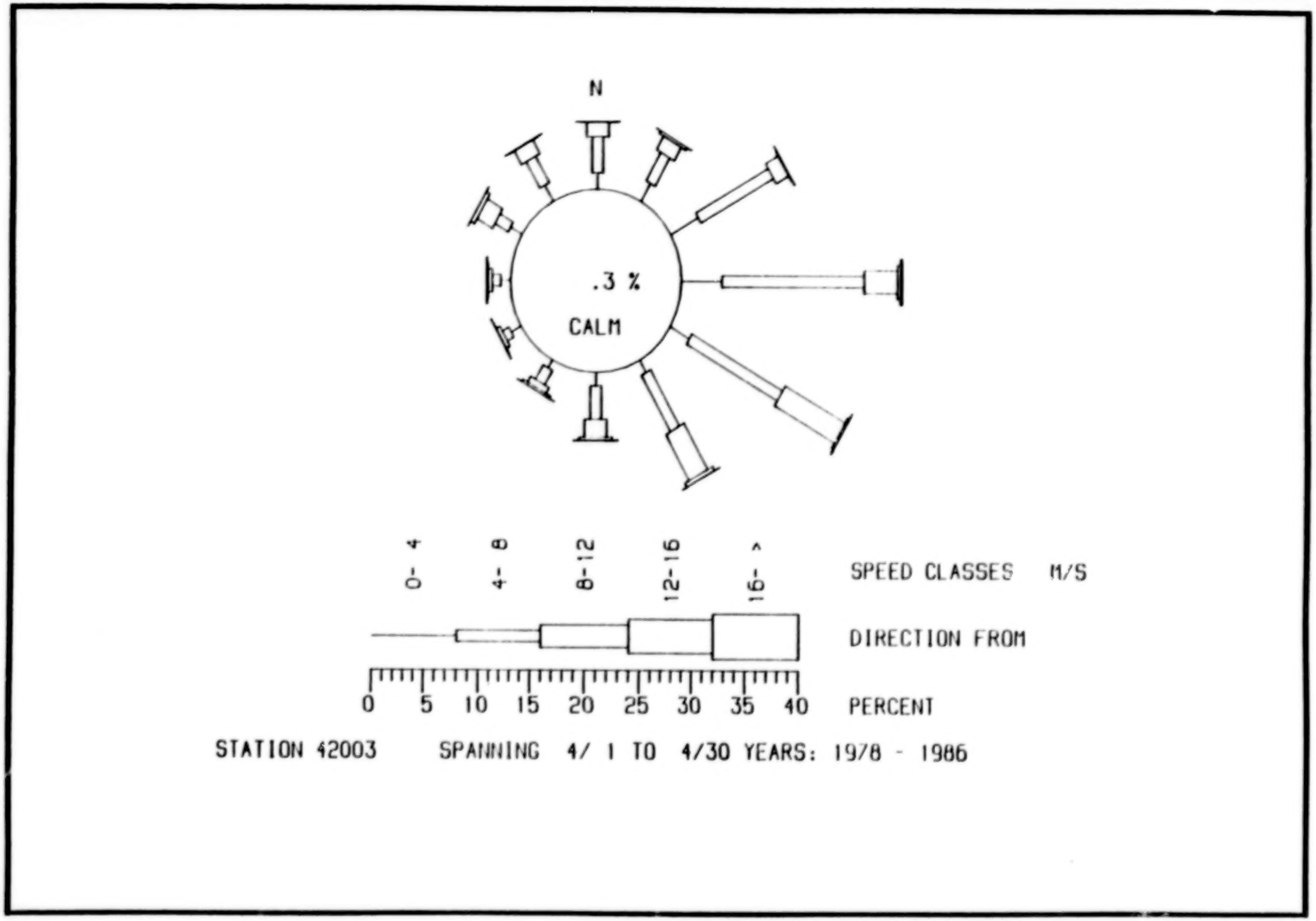


Figure 2.6-6 April transitional season wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.

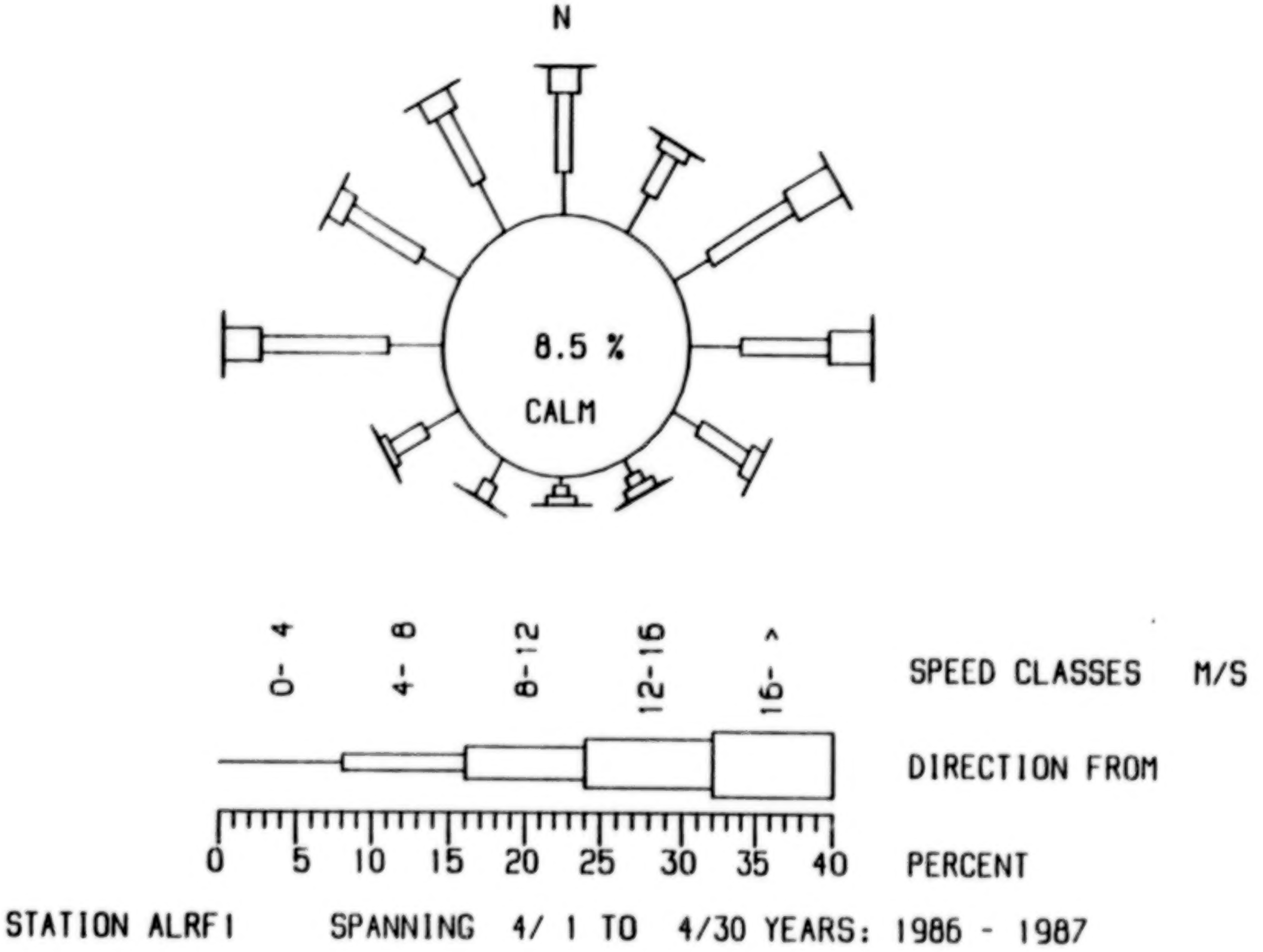
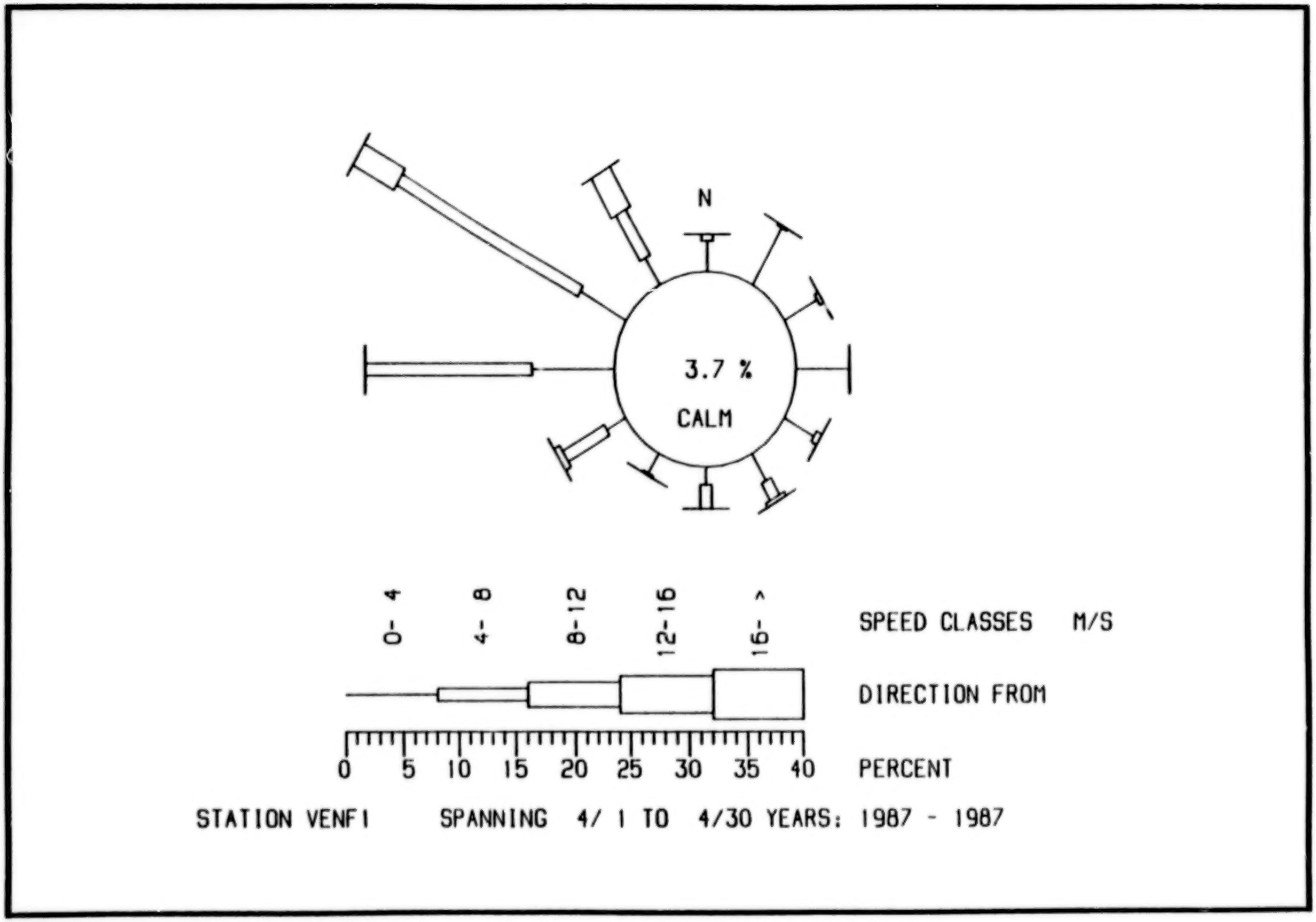


Figure 2.6-6 April transitional season wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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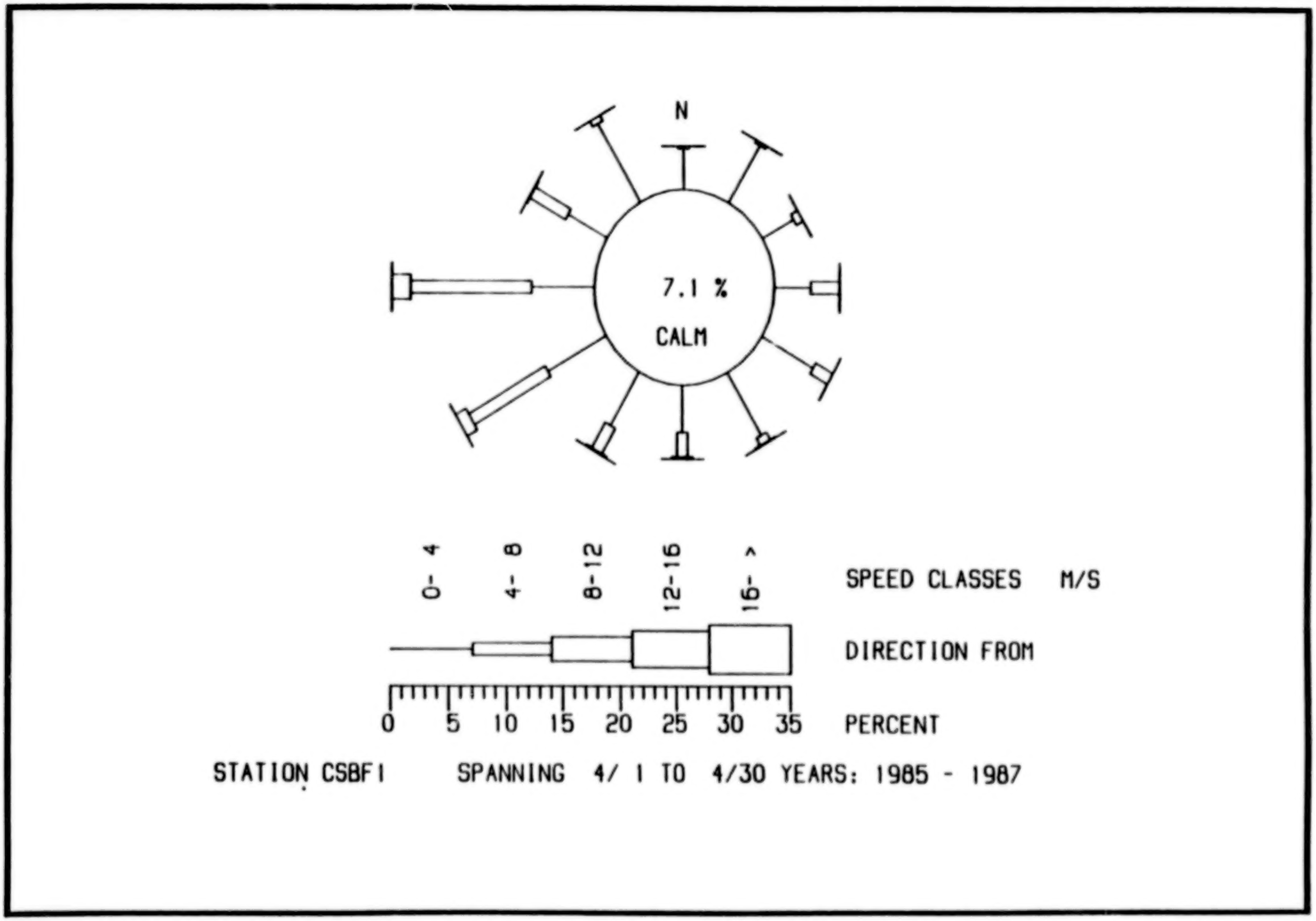

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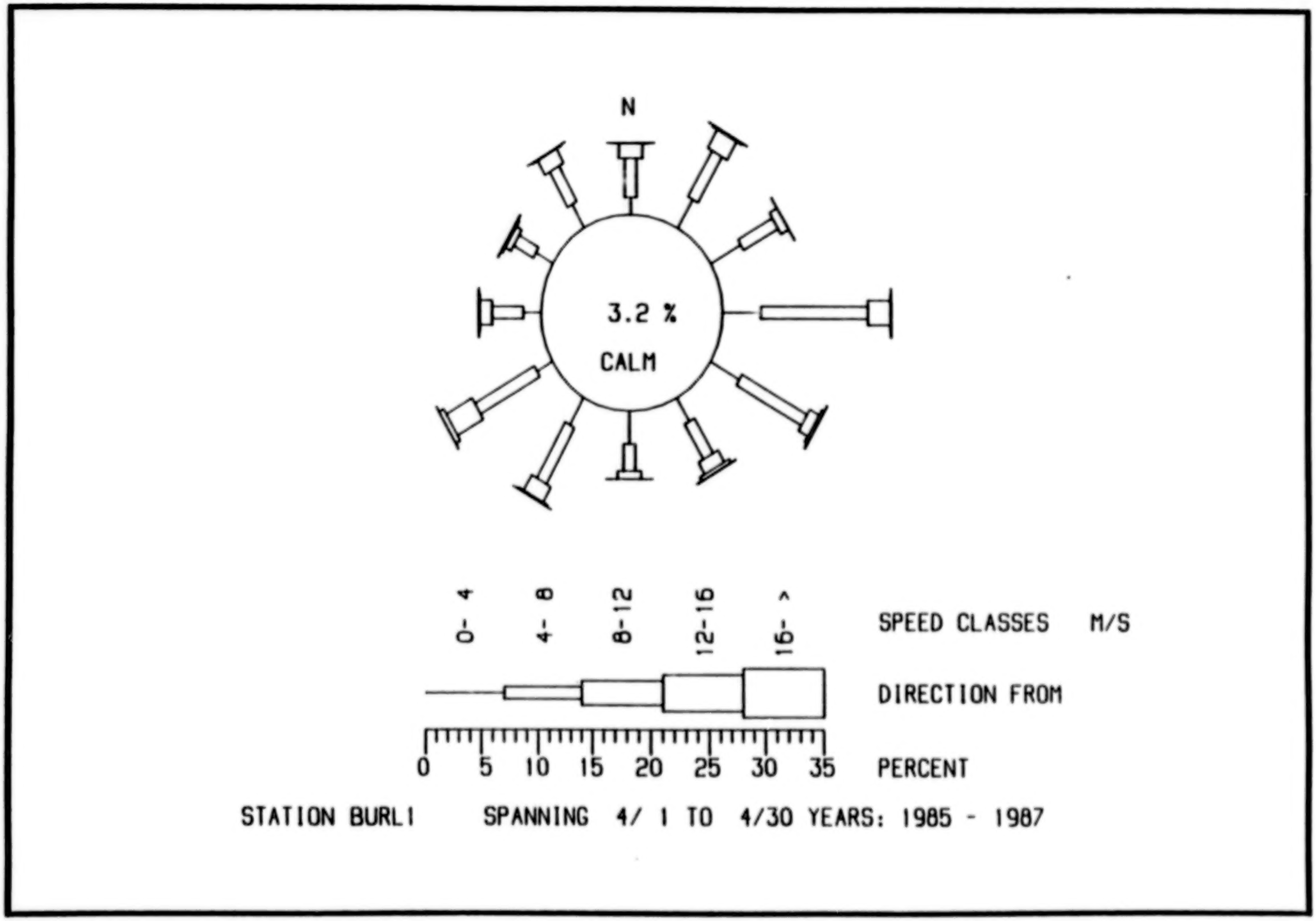

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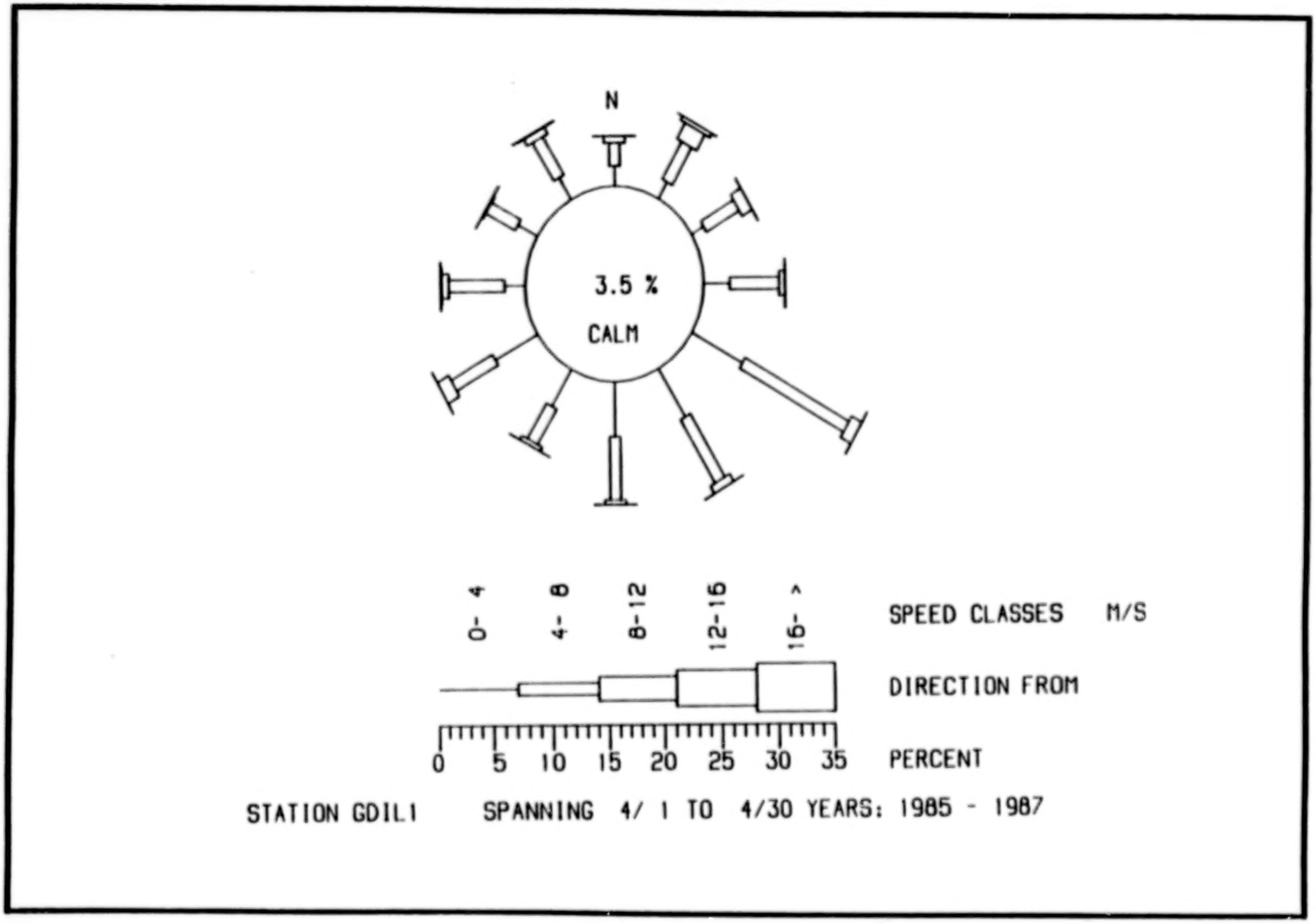

Figure 2.6-6 April transitional season wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.

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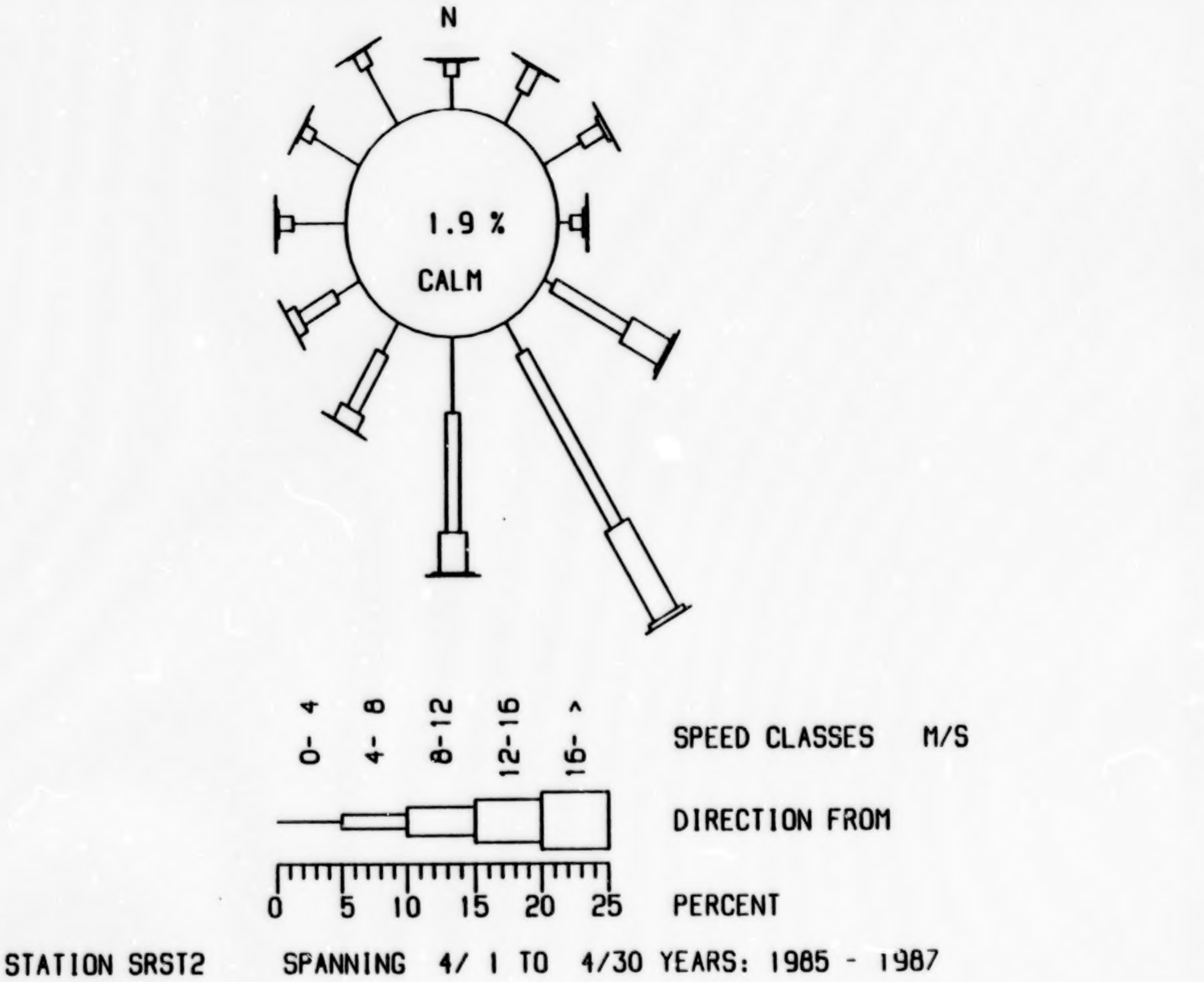

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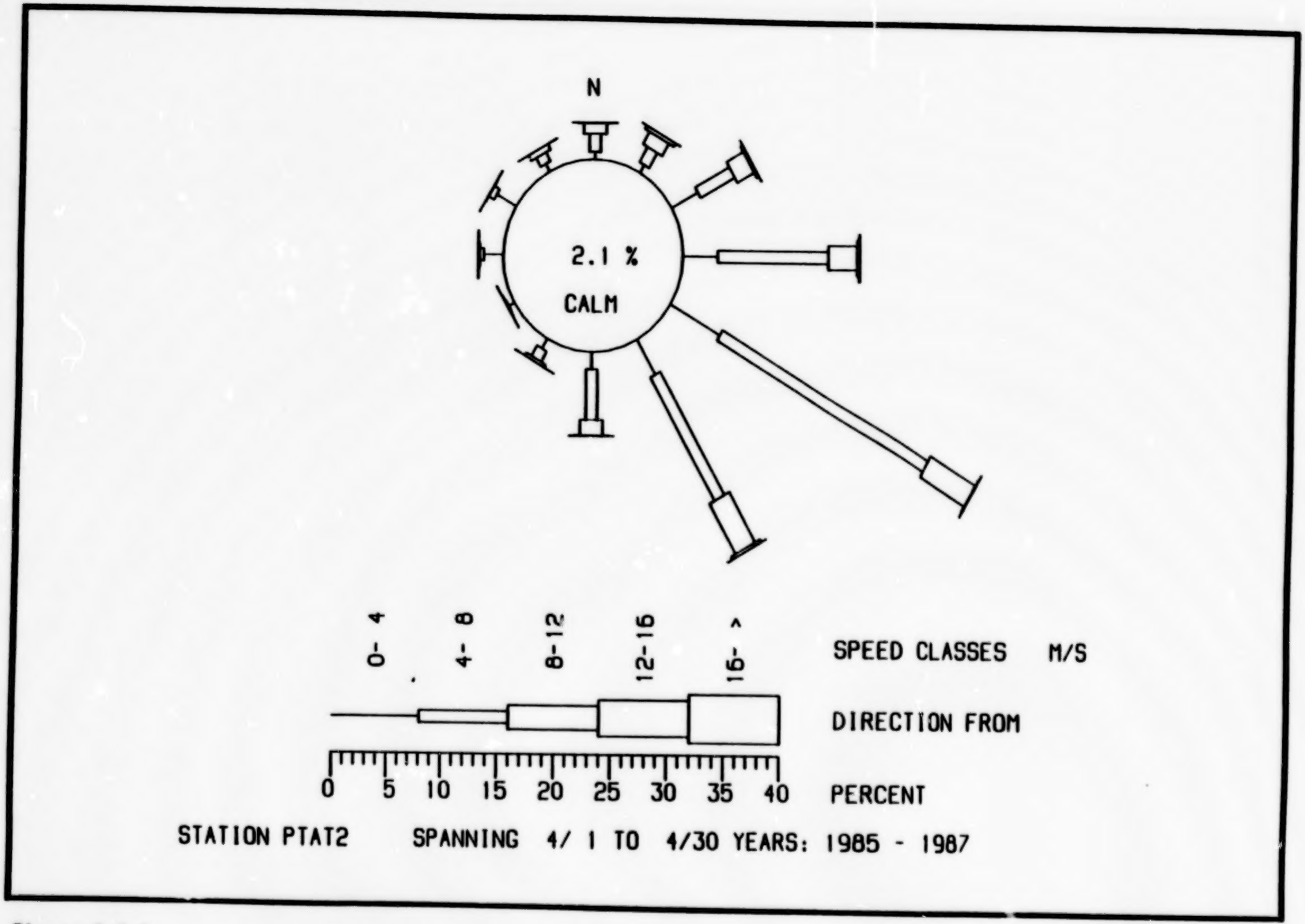

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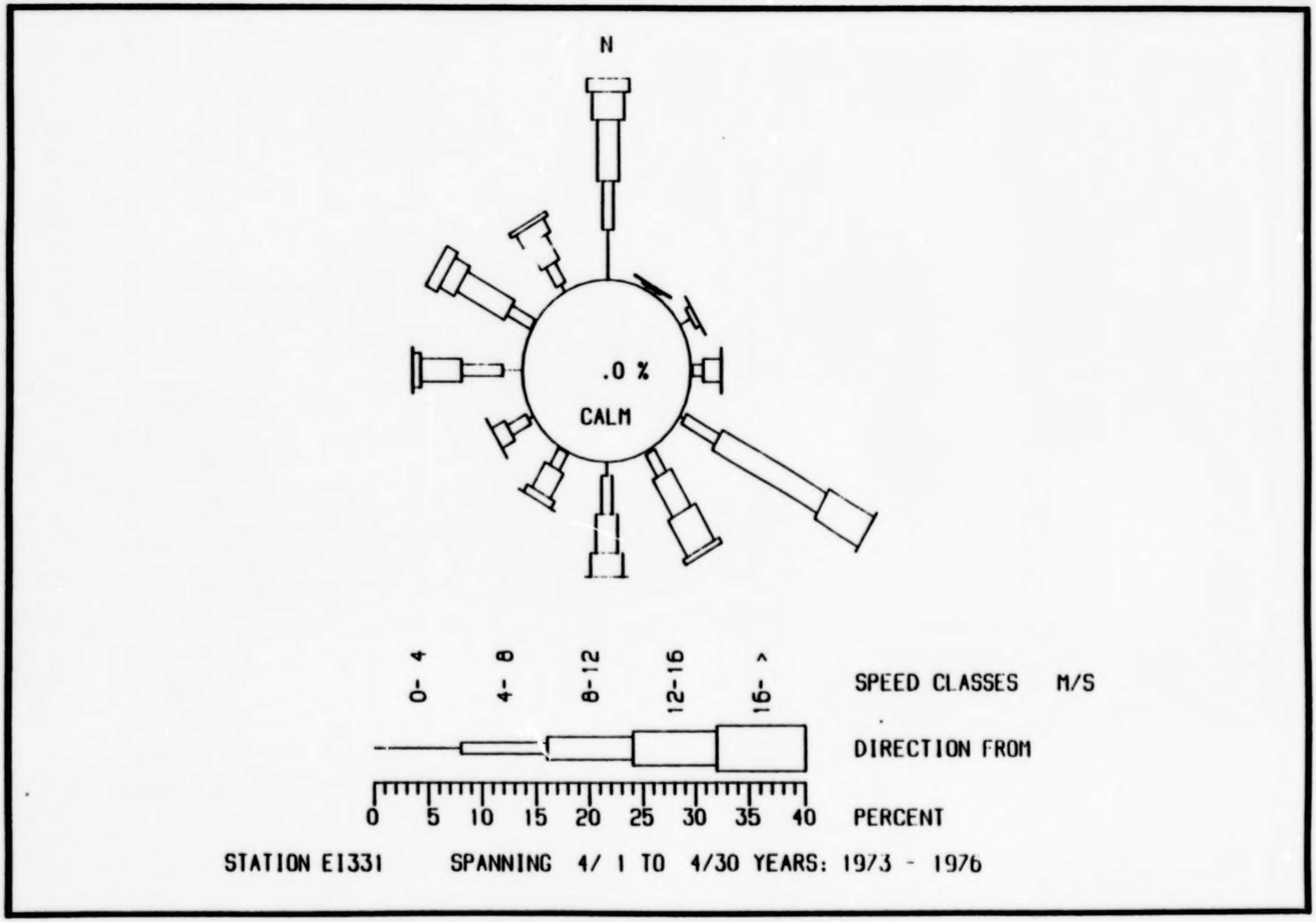

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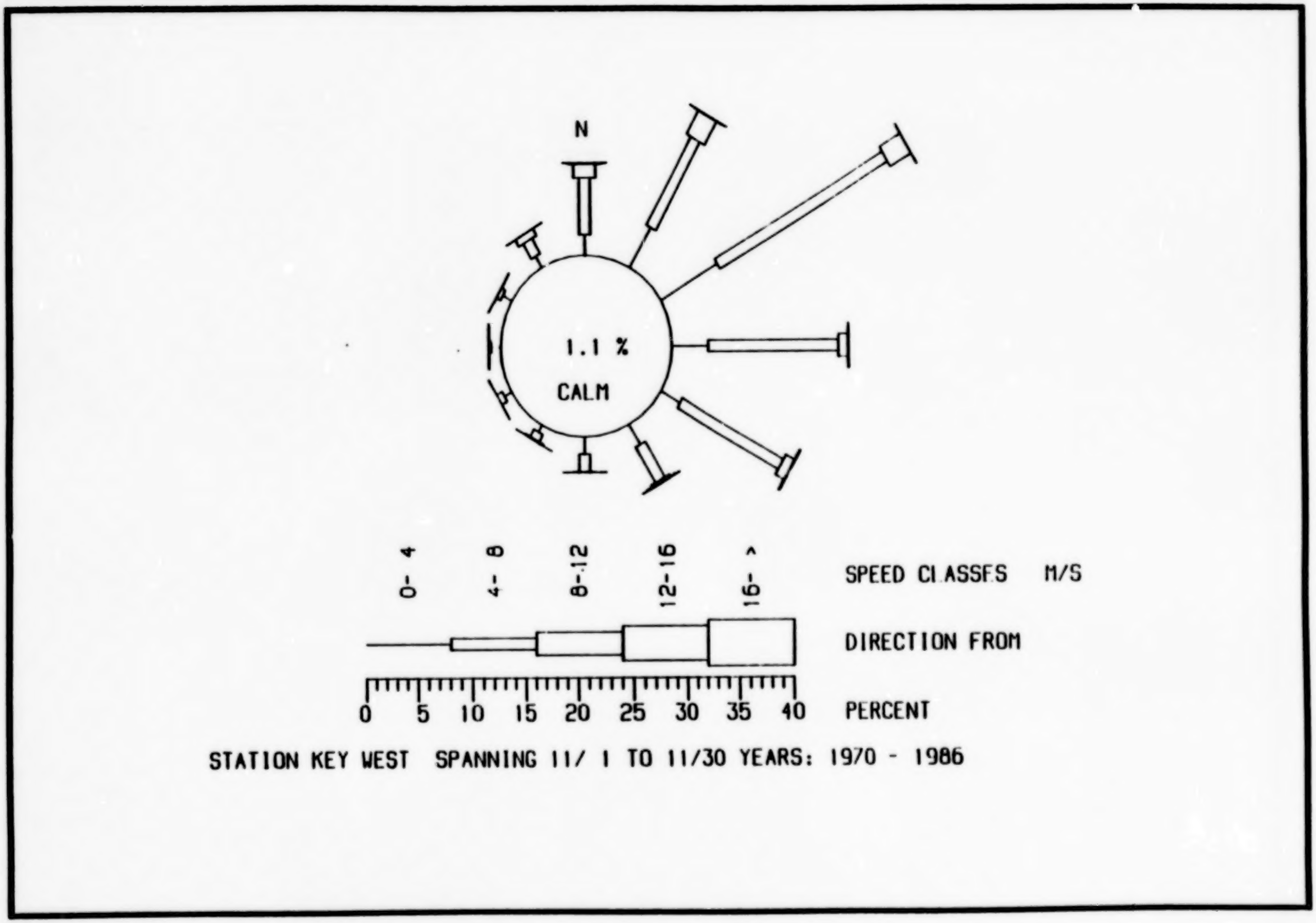
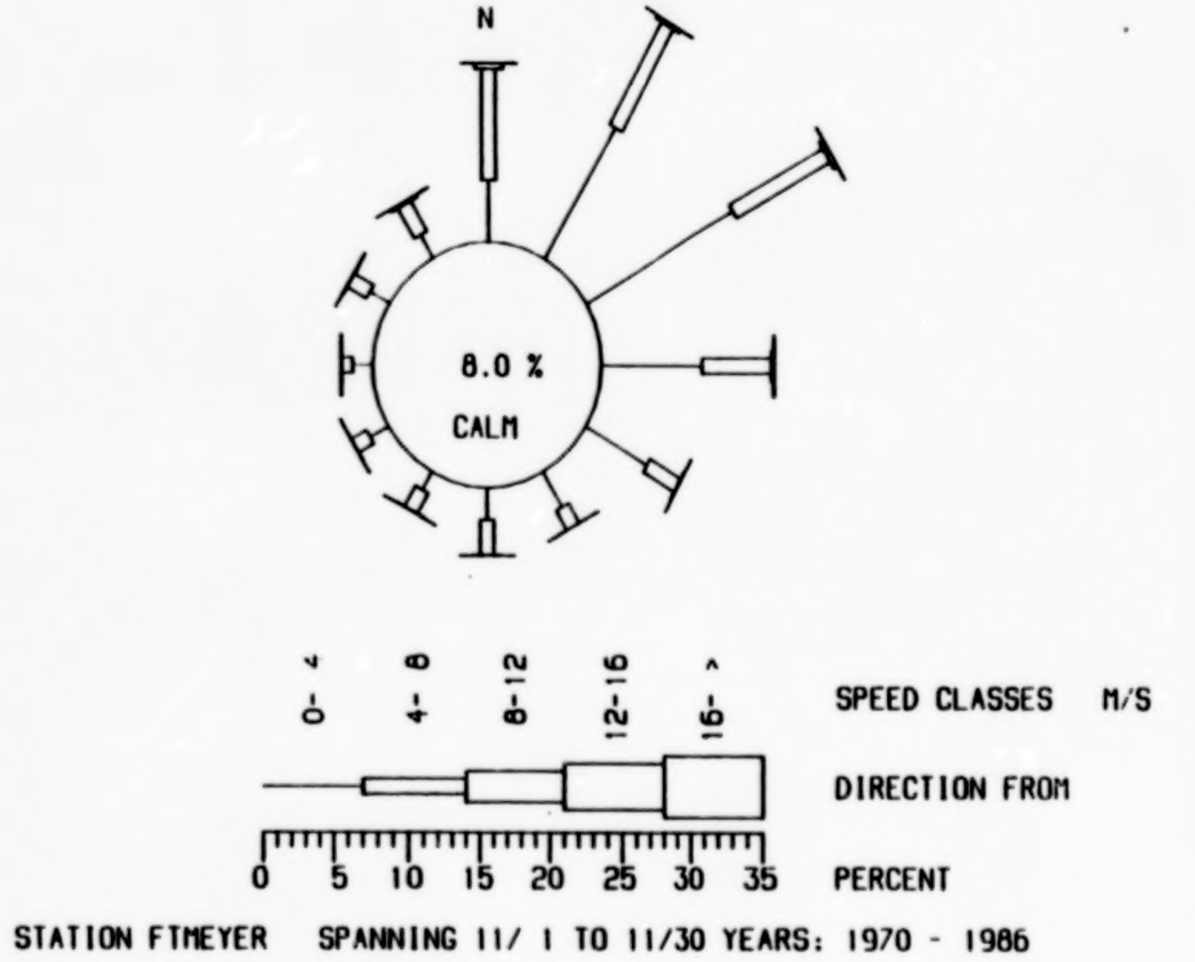


Figure 2.6-7 November transitional season wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.



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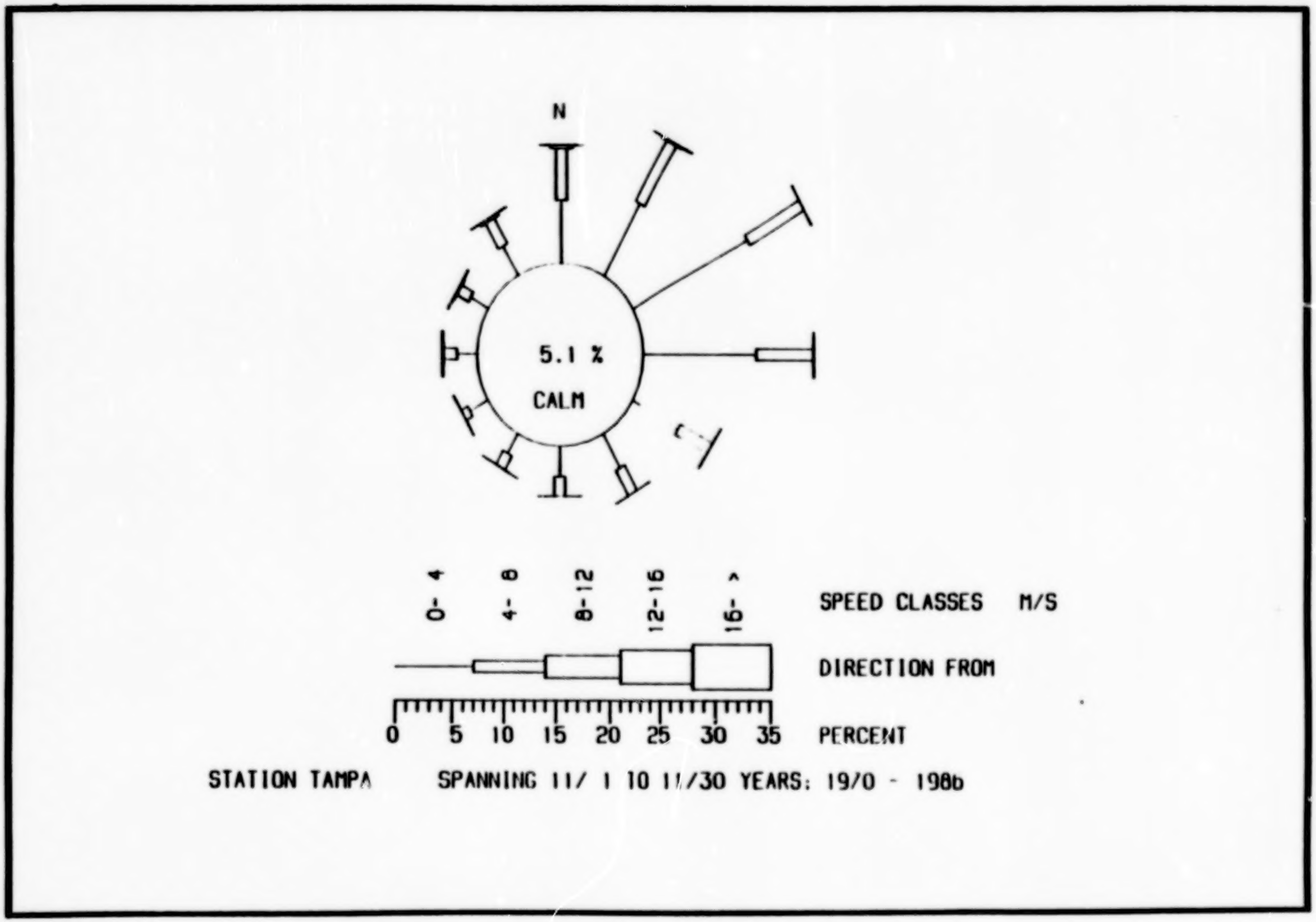

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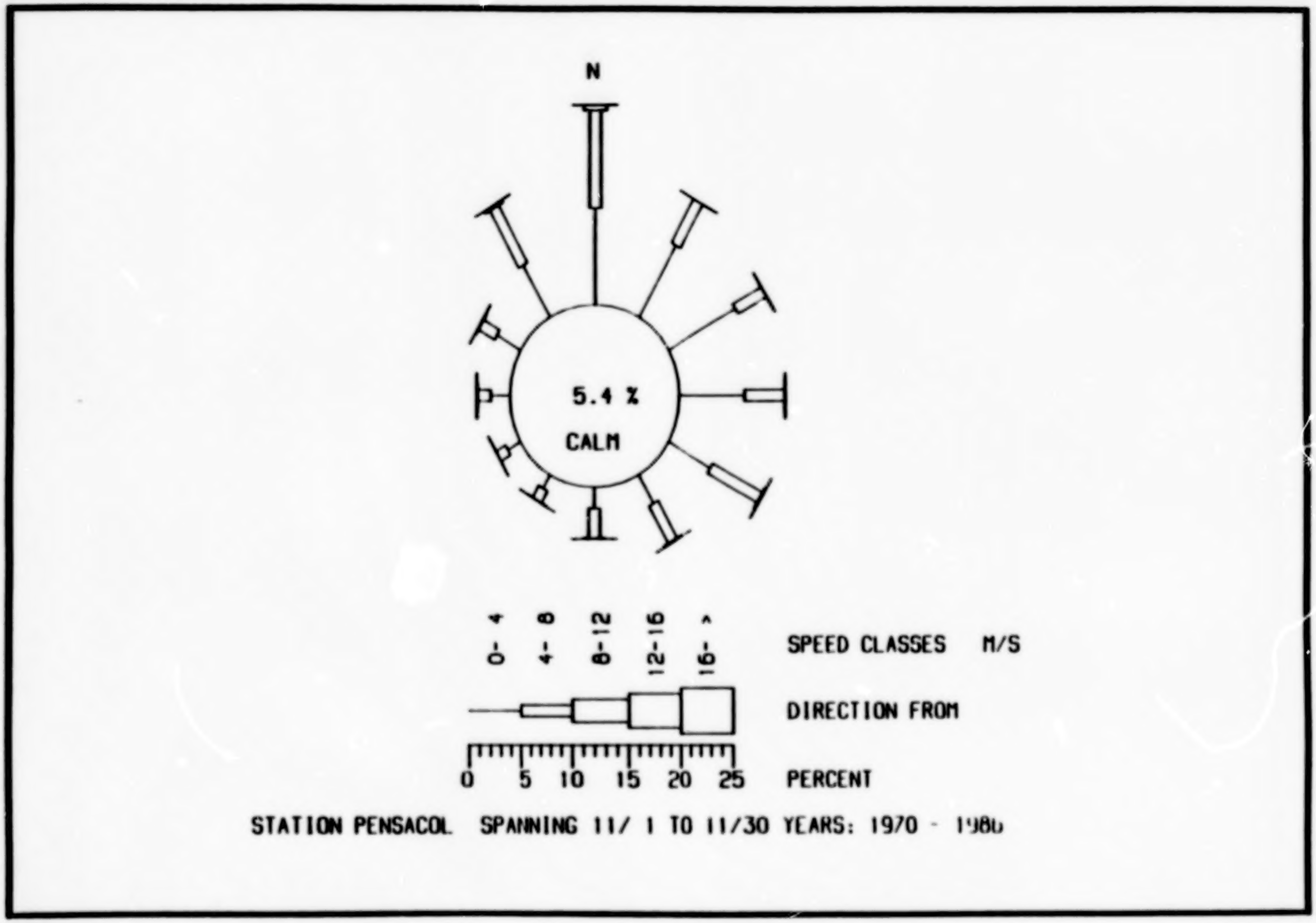
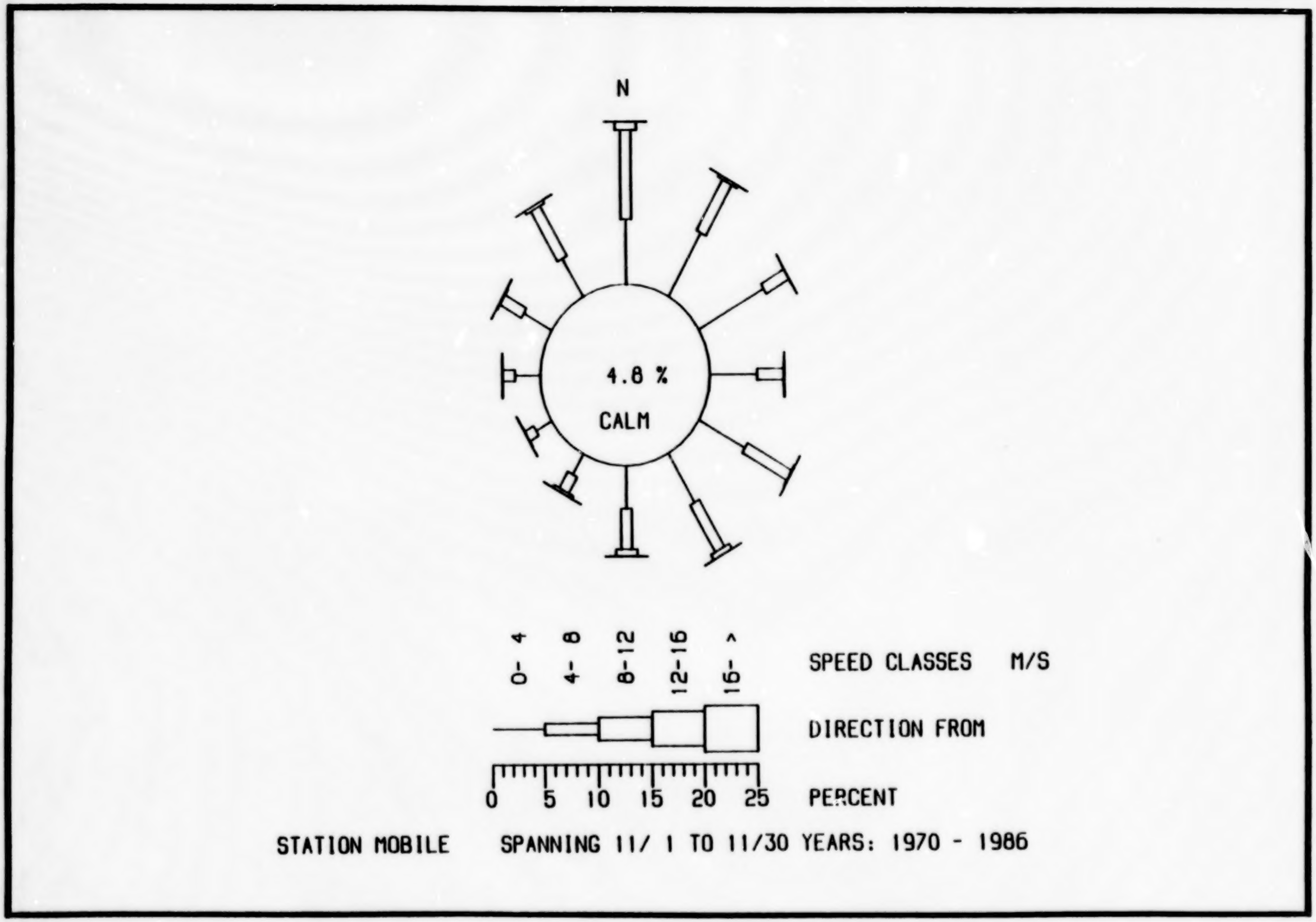


Figure 2.6-7 **November transitional season wind roses for the indicated station. The percentage of the record in each speed and direction class is given by the length of the appropriate box.**



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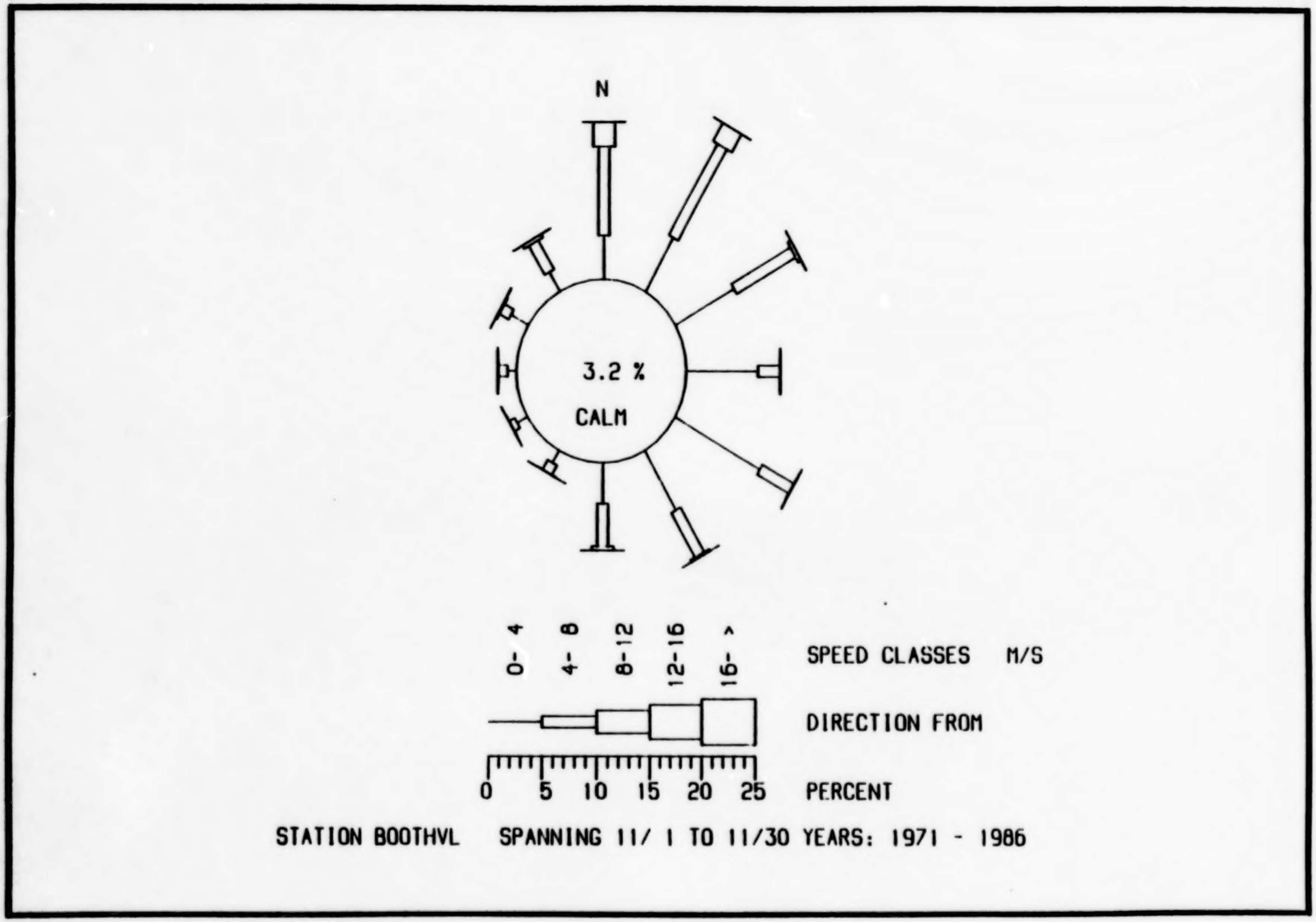

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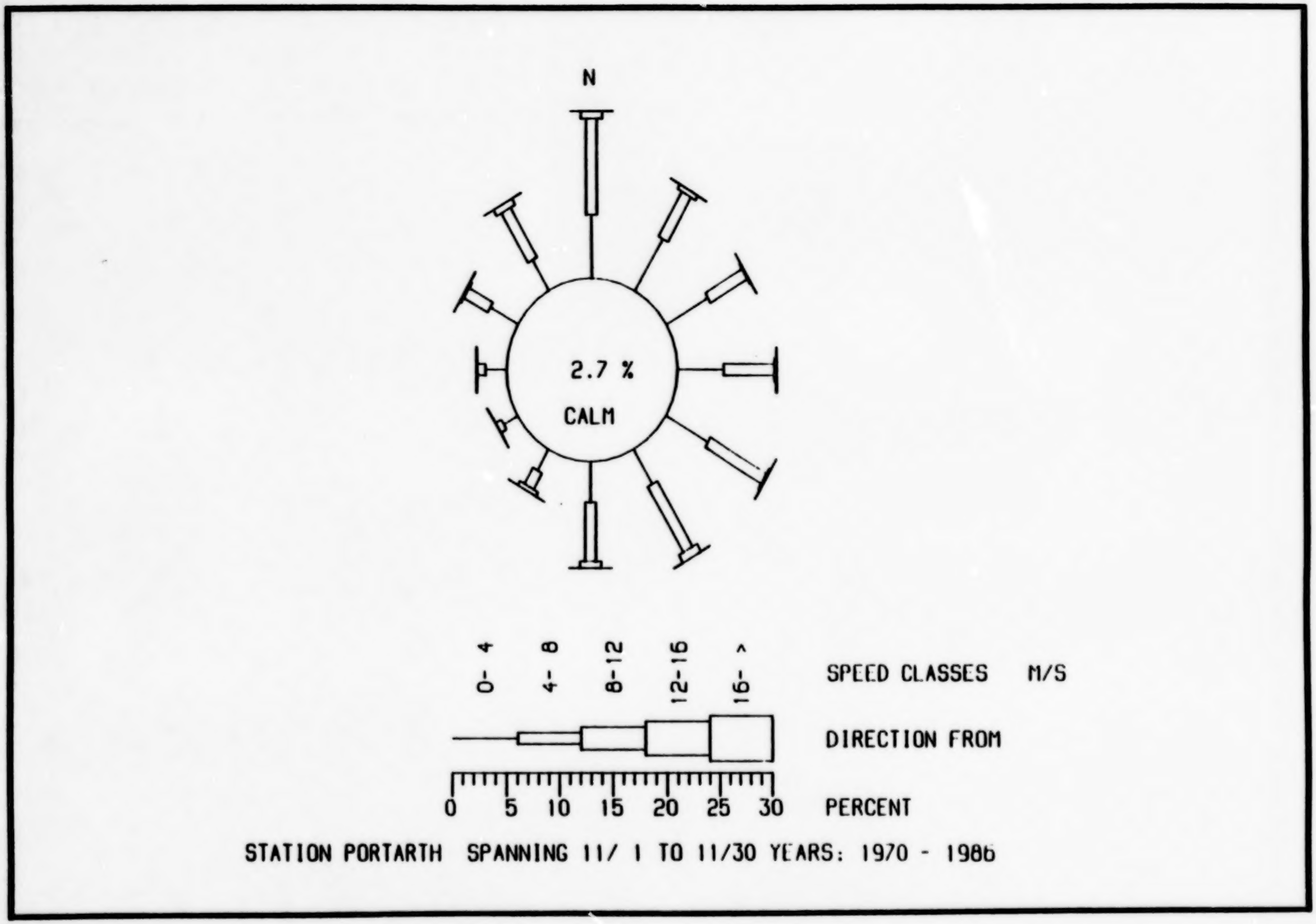

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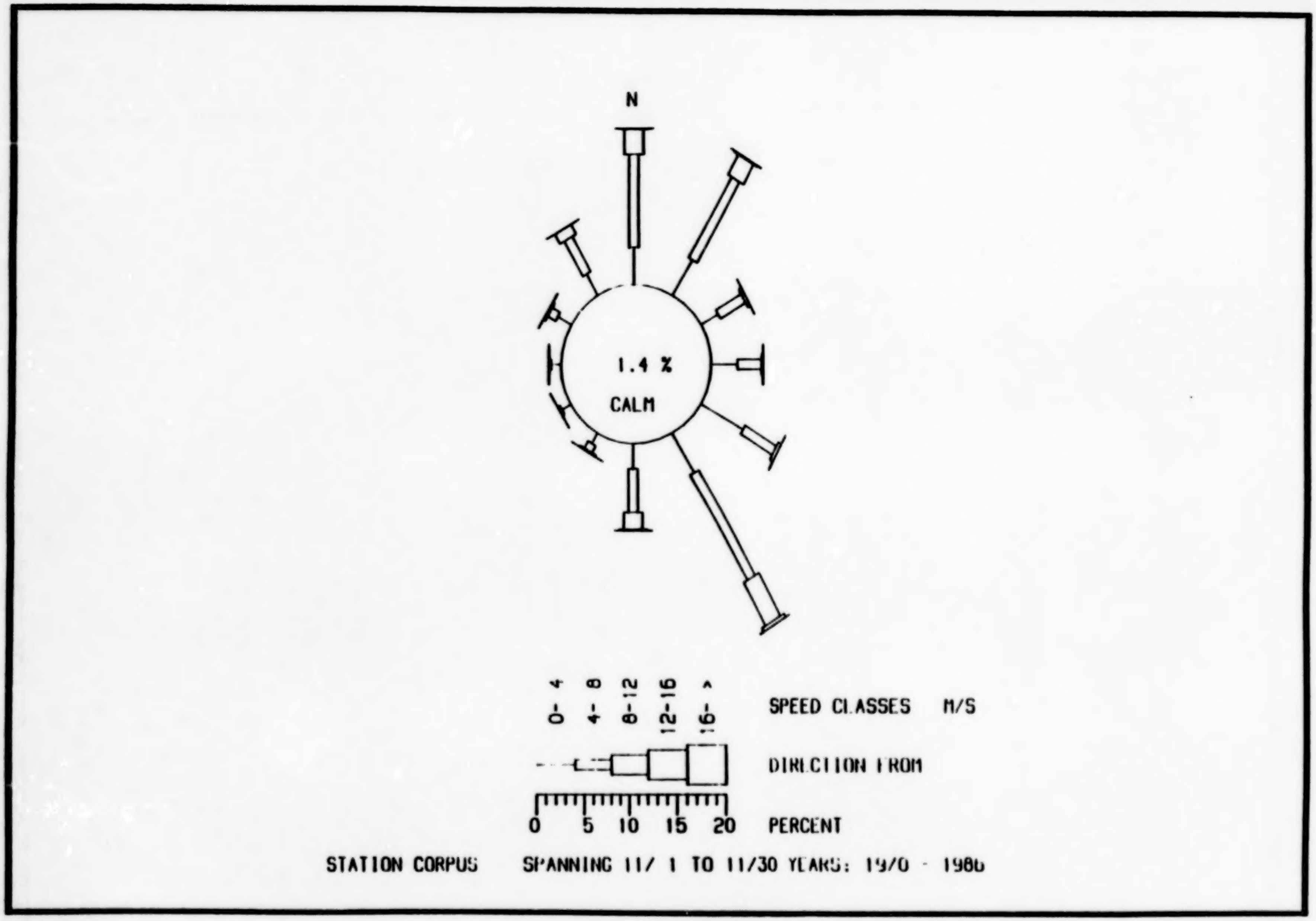

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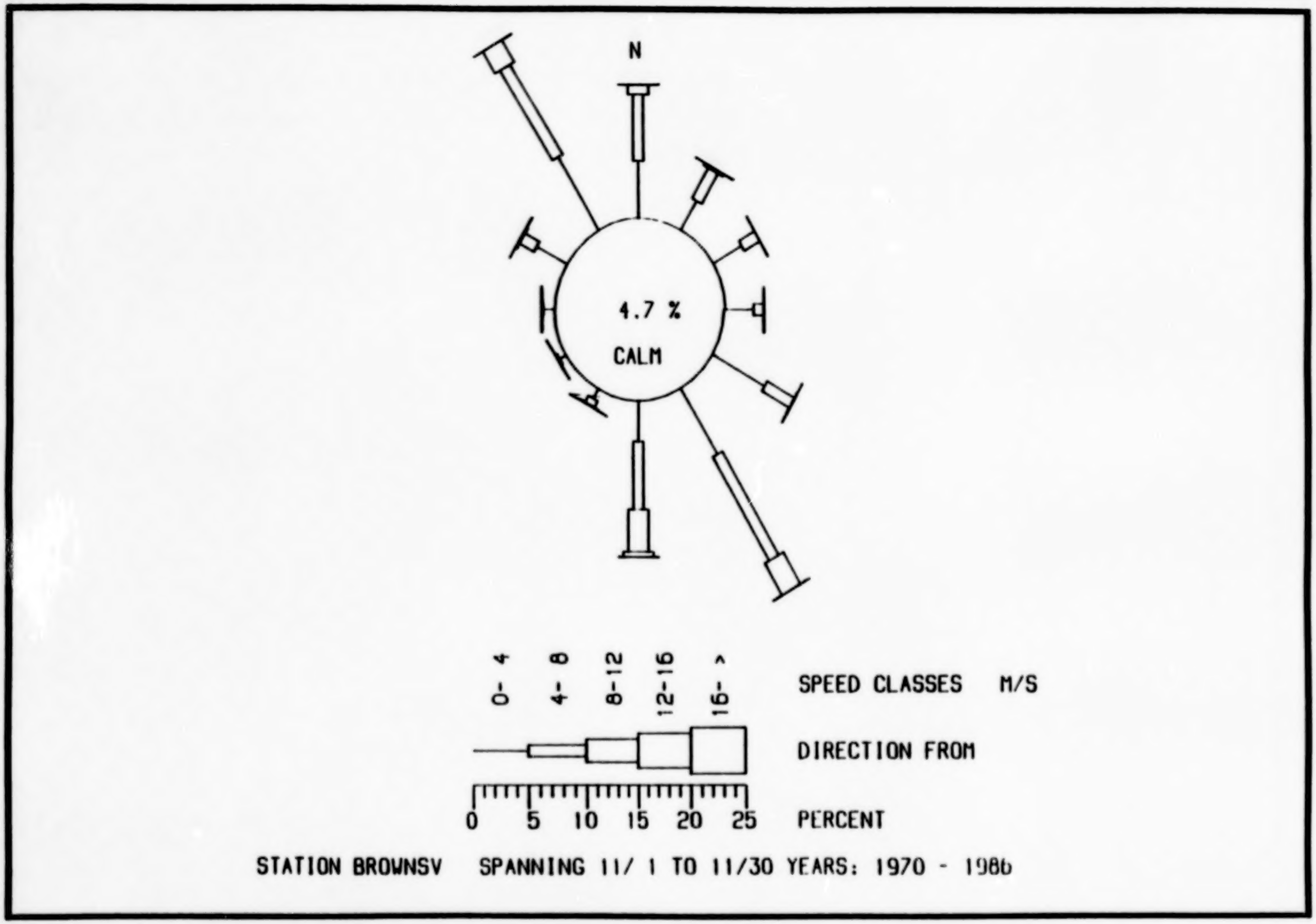

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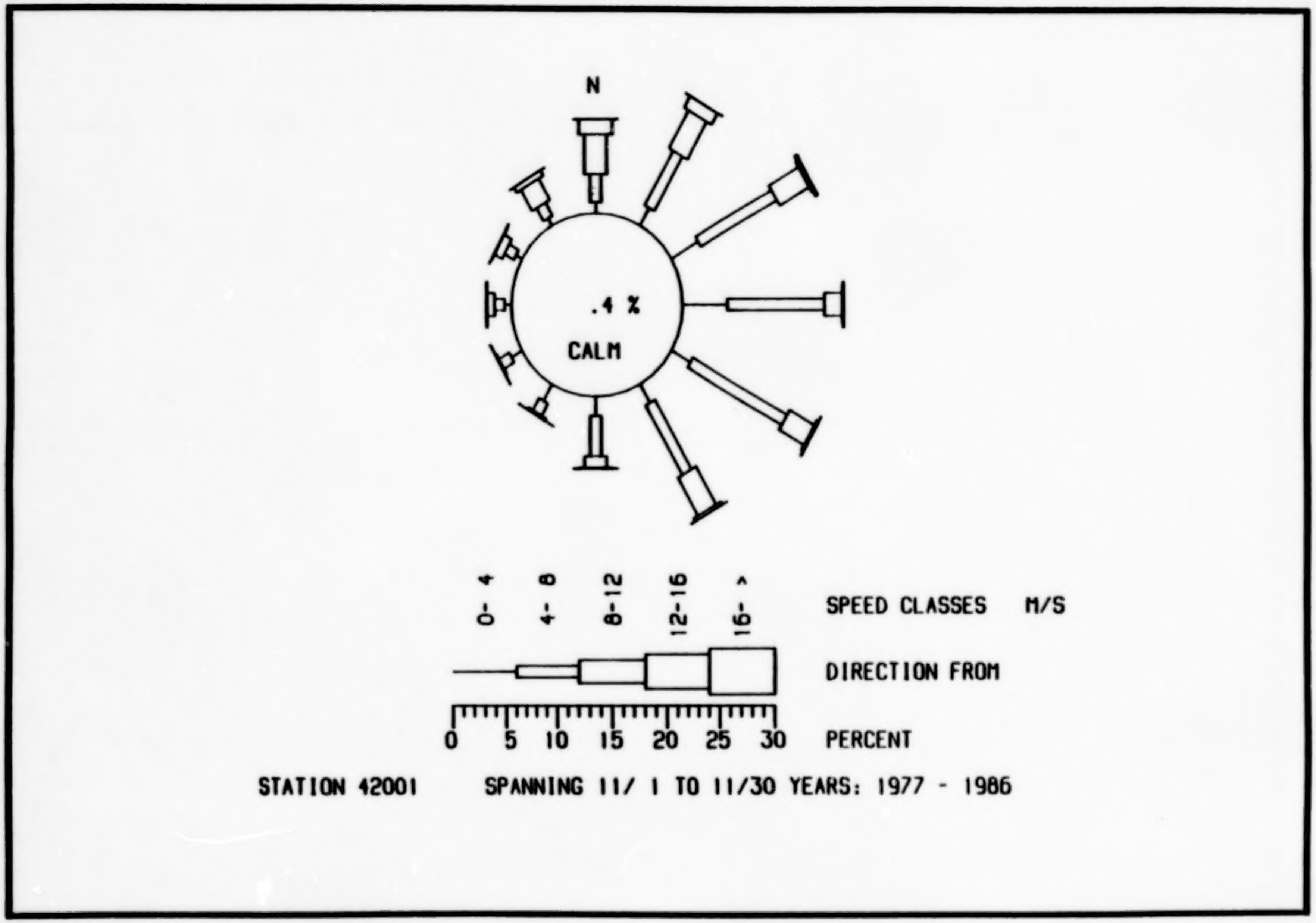

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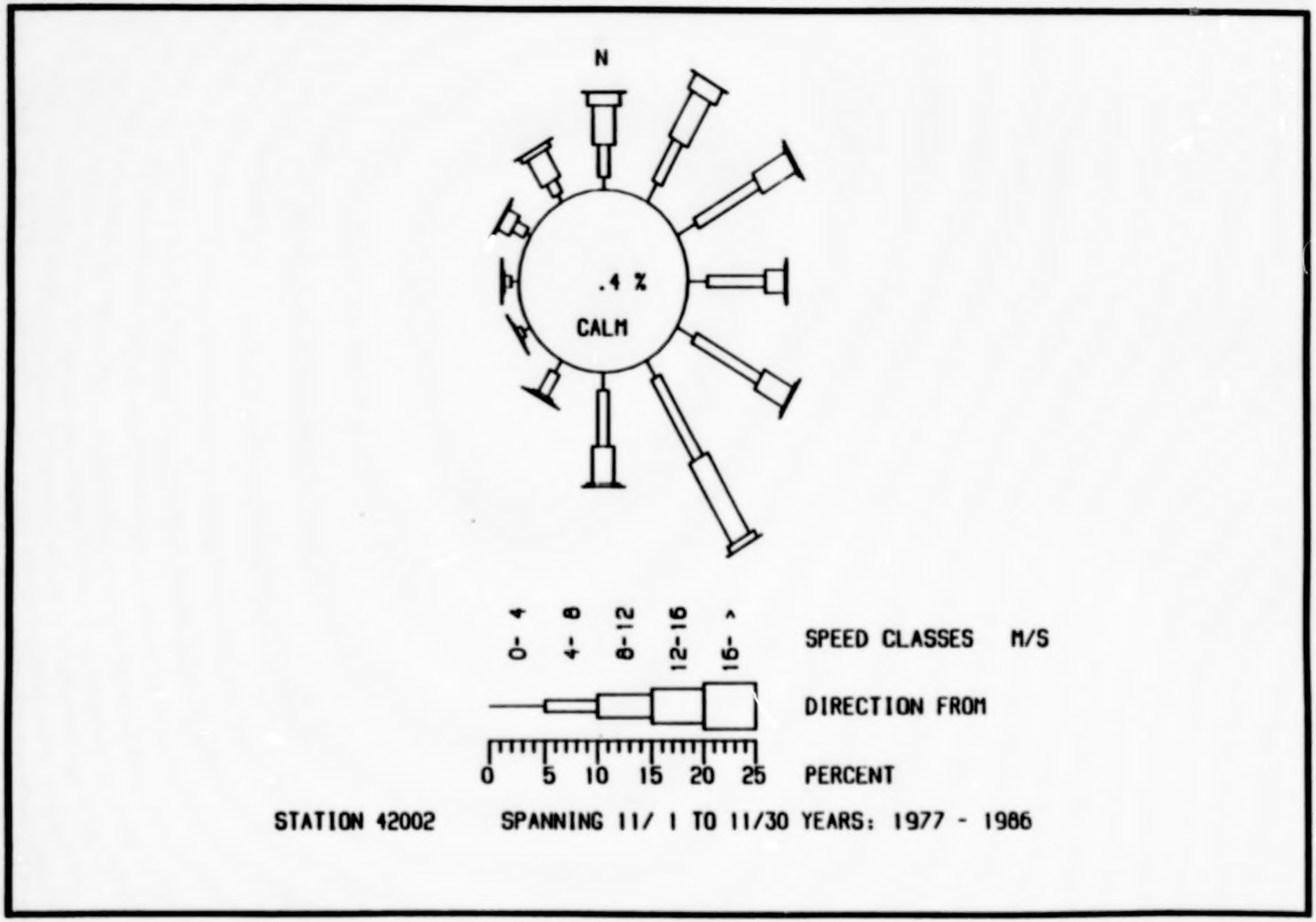

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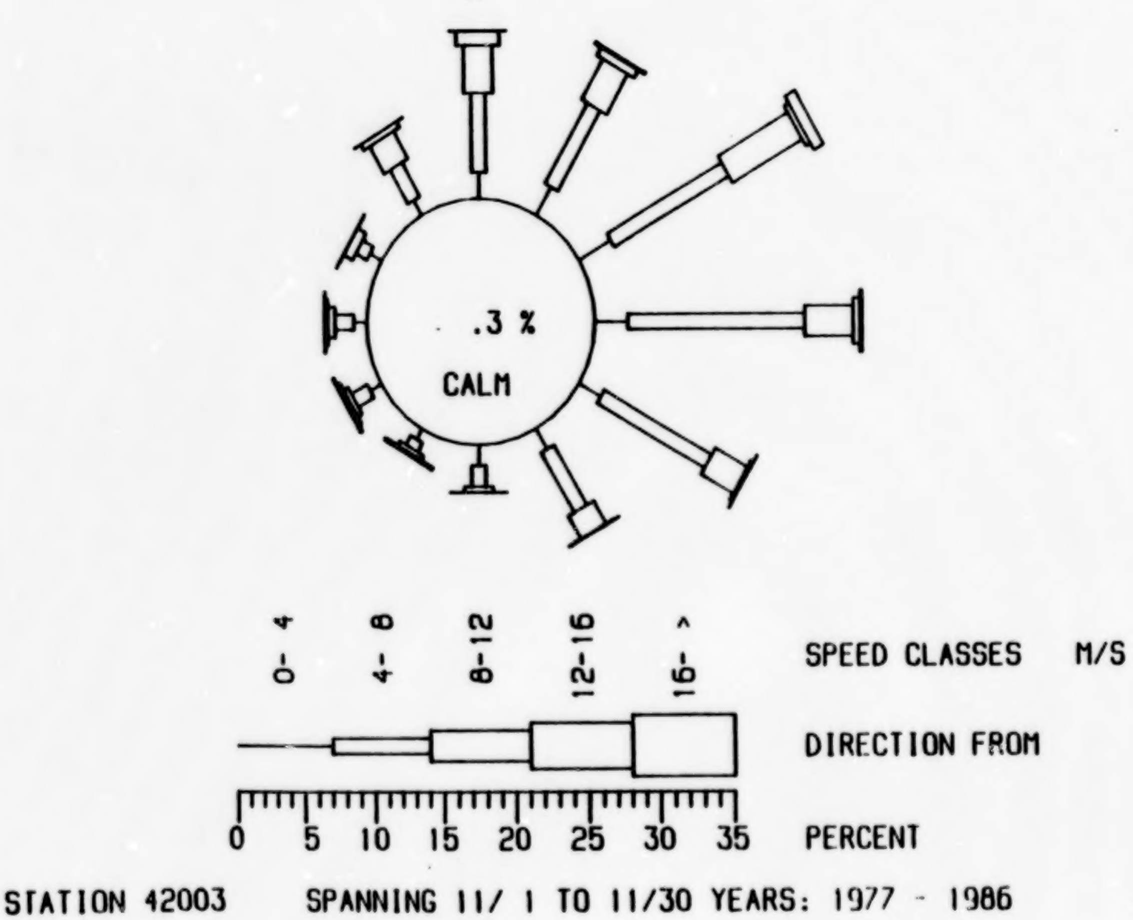

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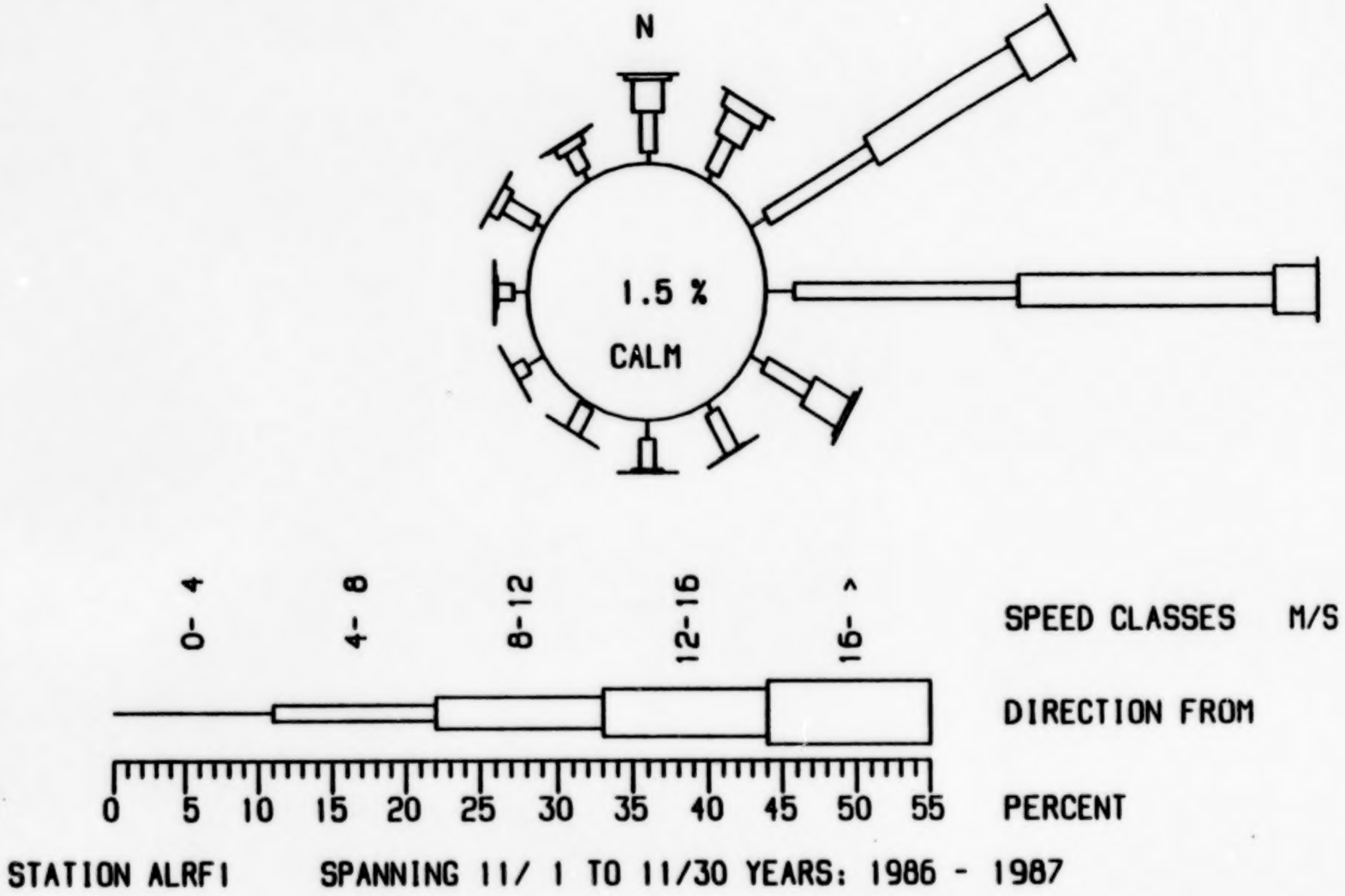

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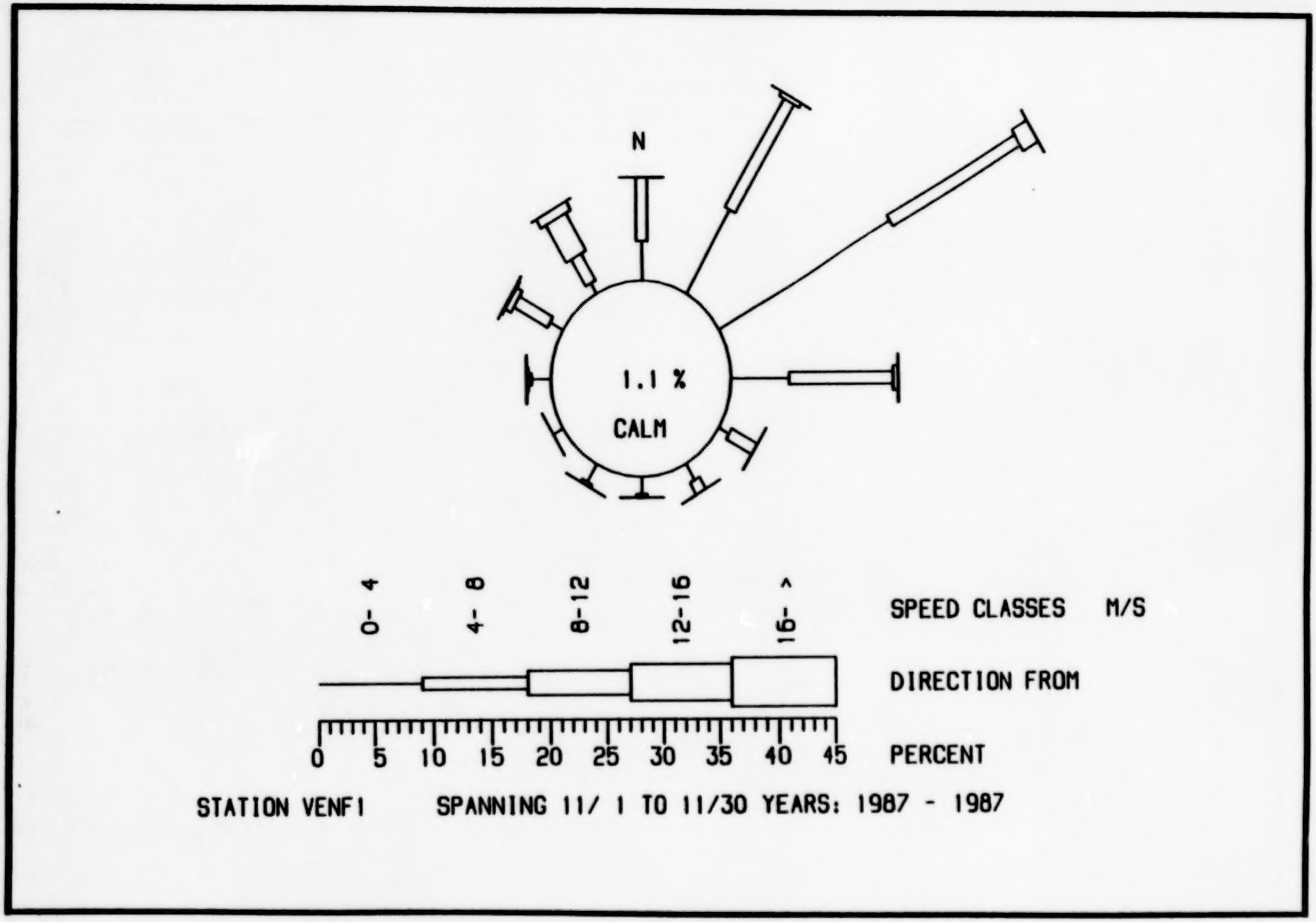

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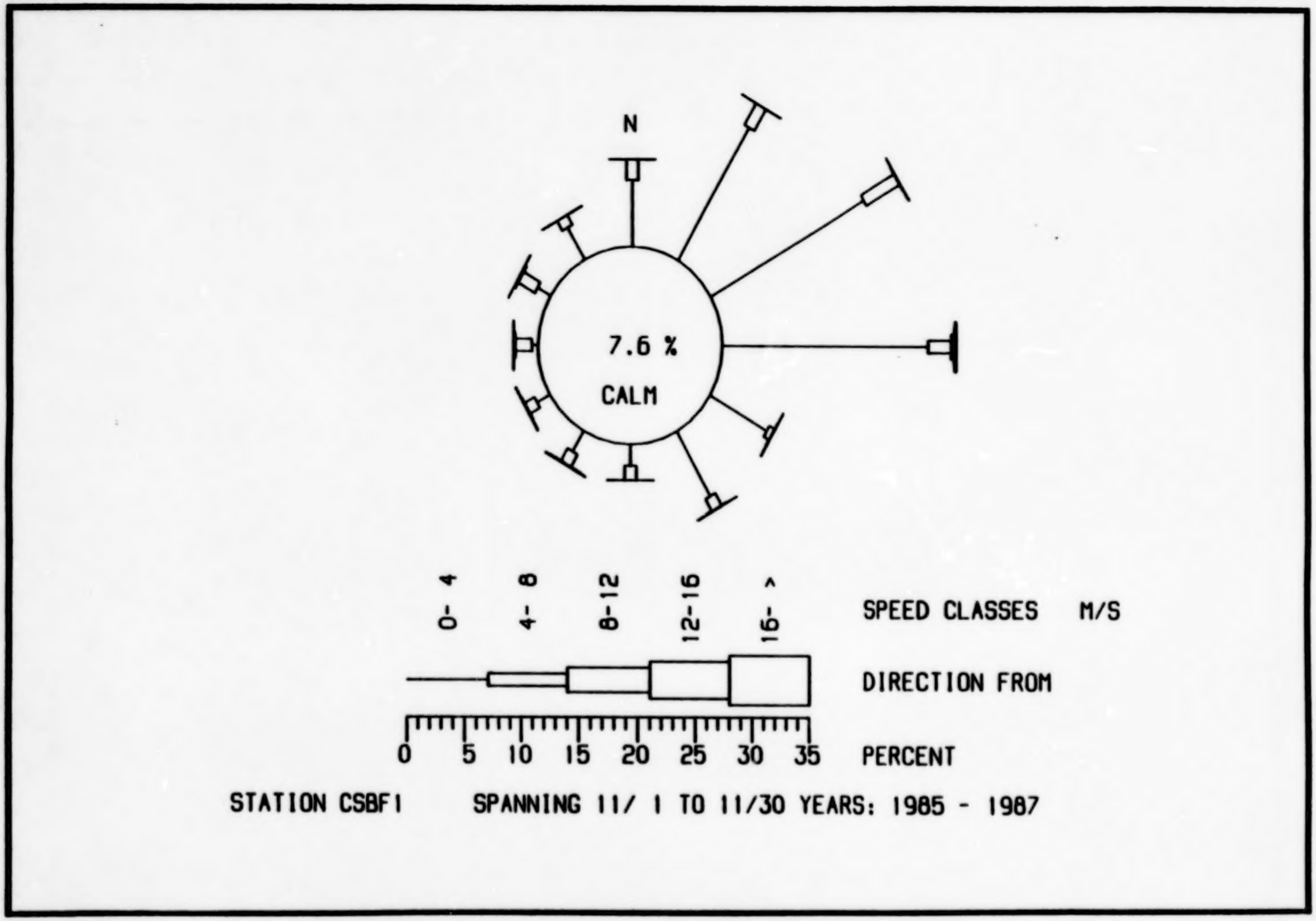

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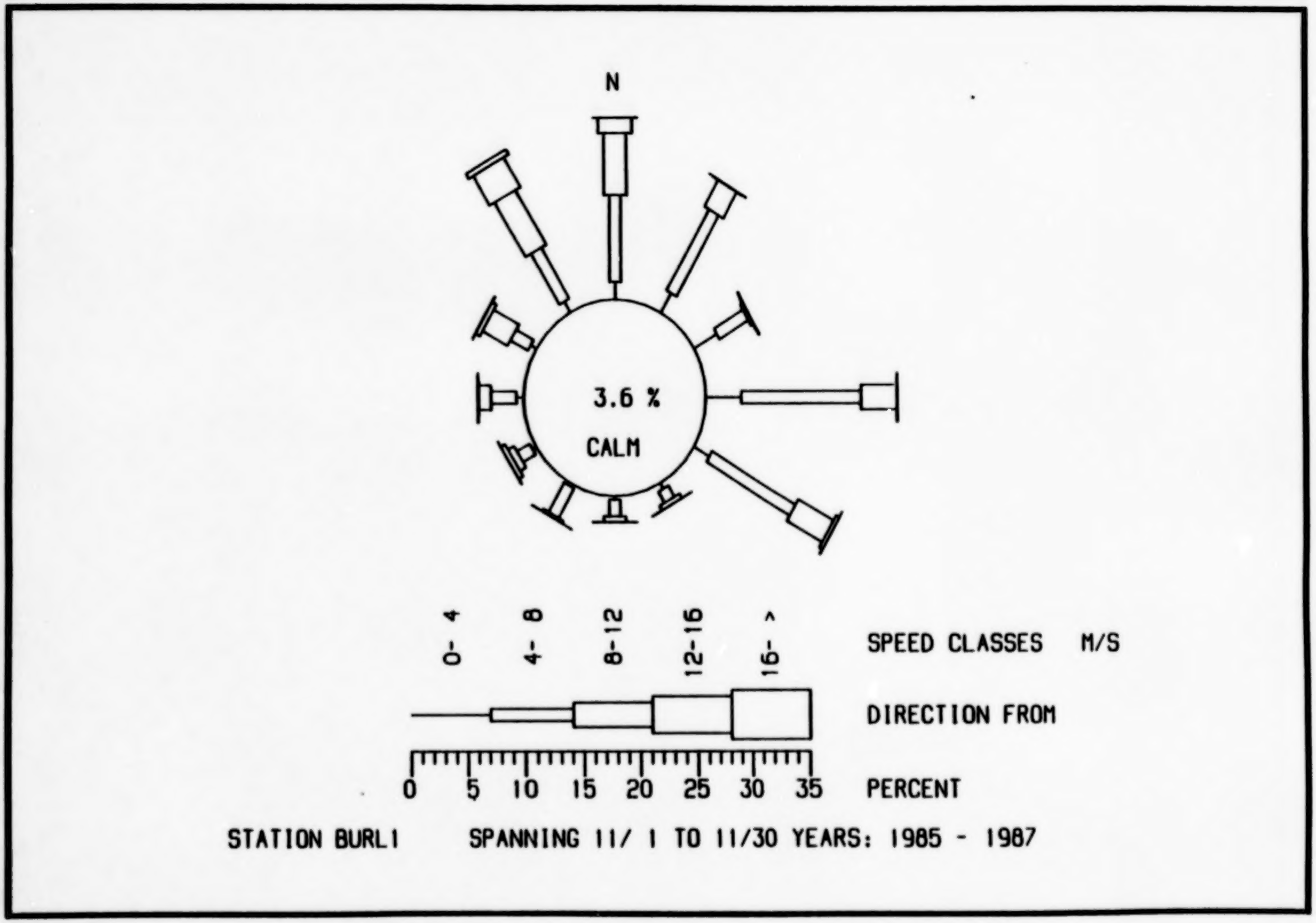

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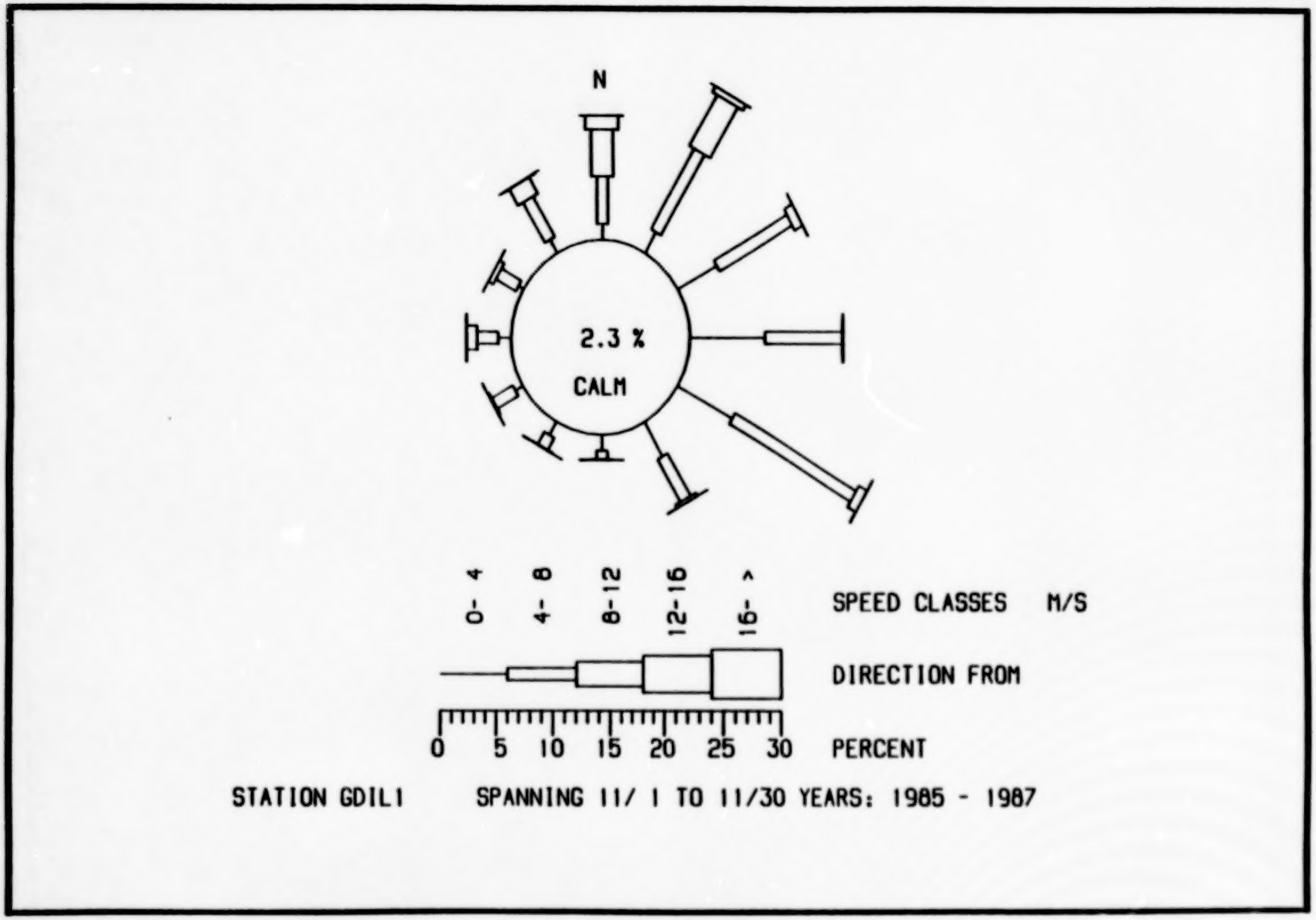

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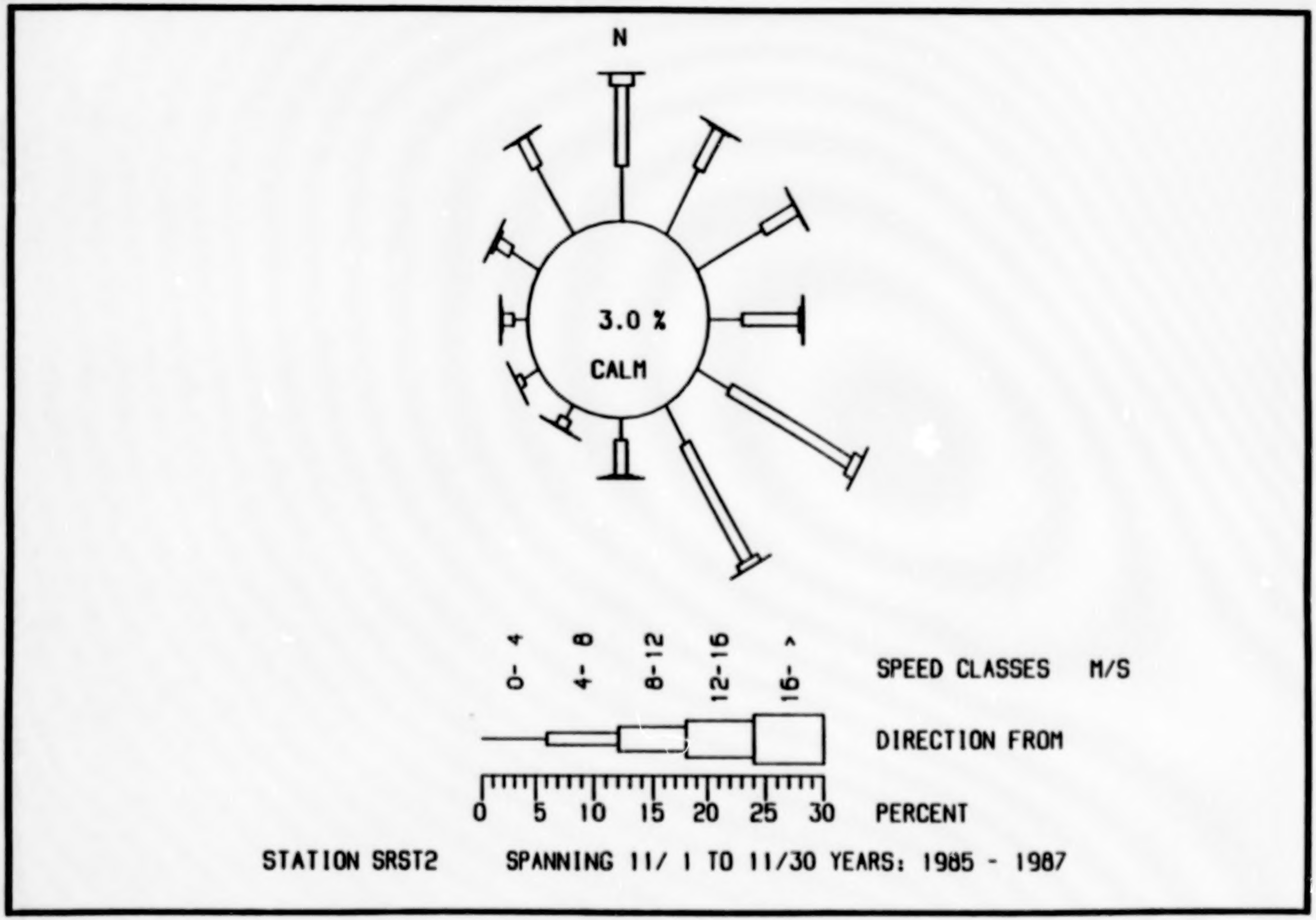

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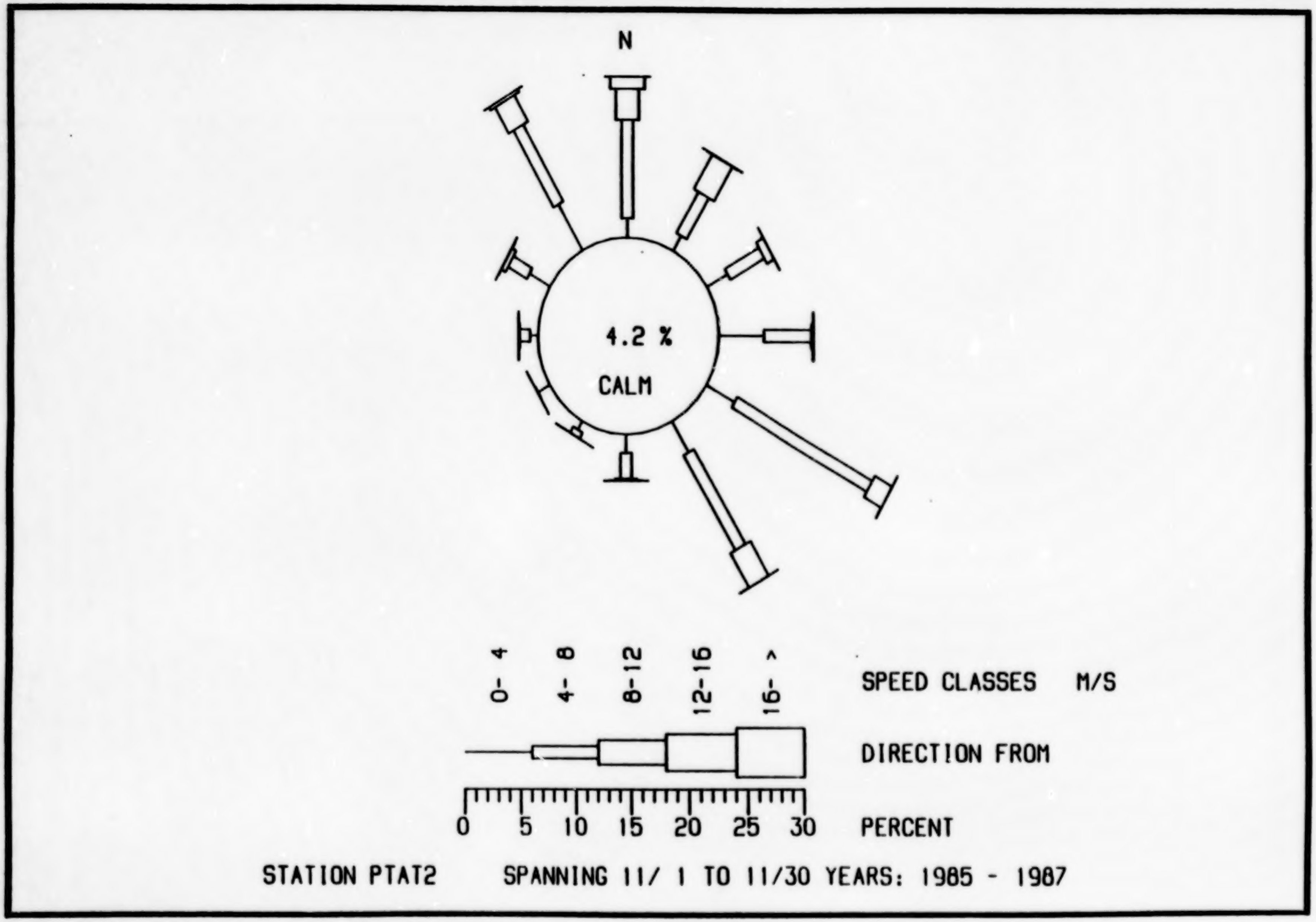

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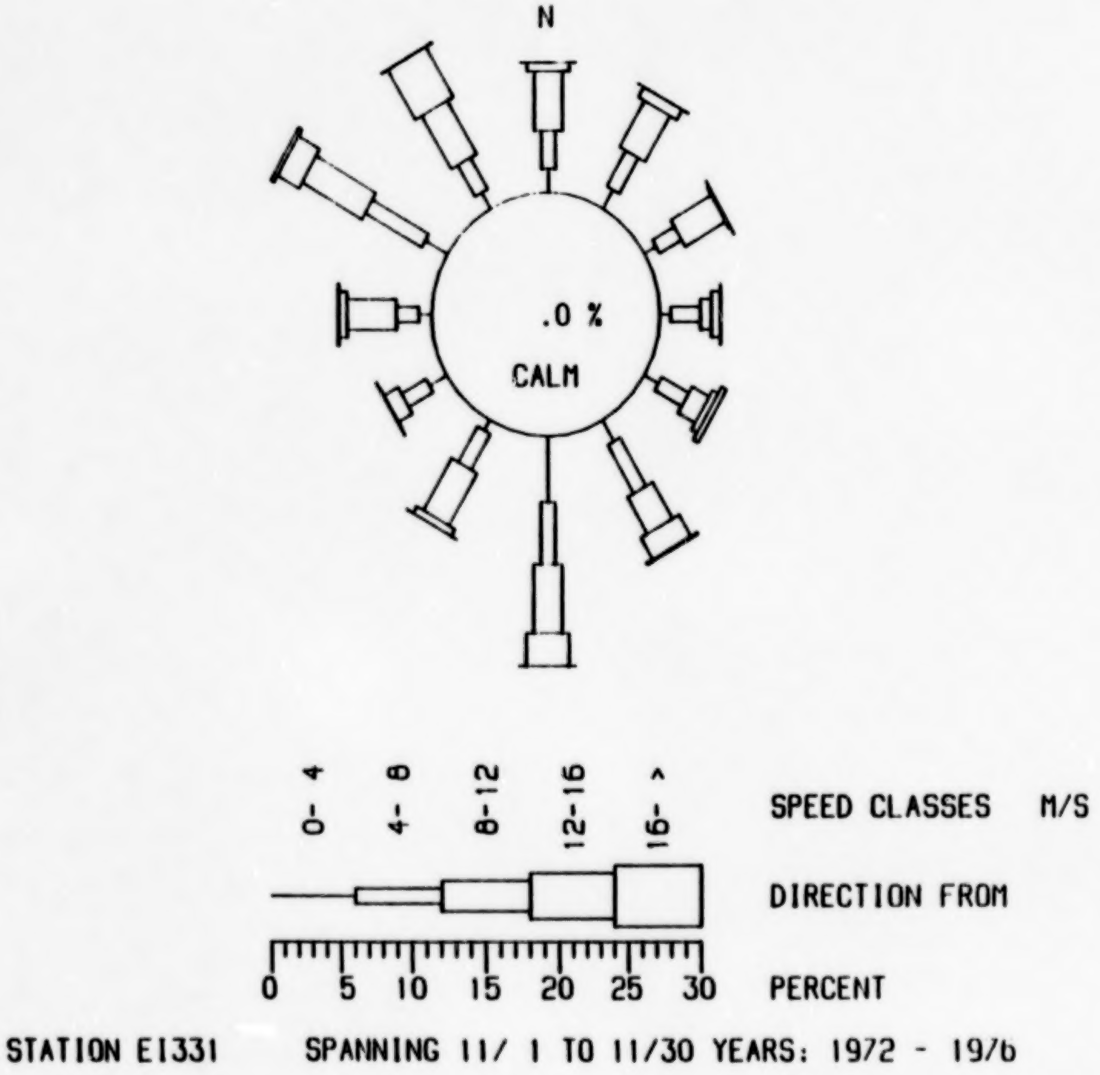

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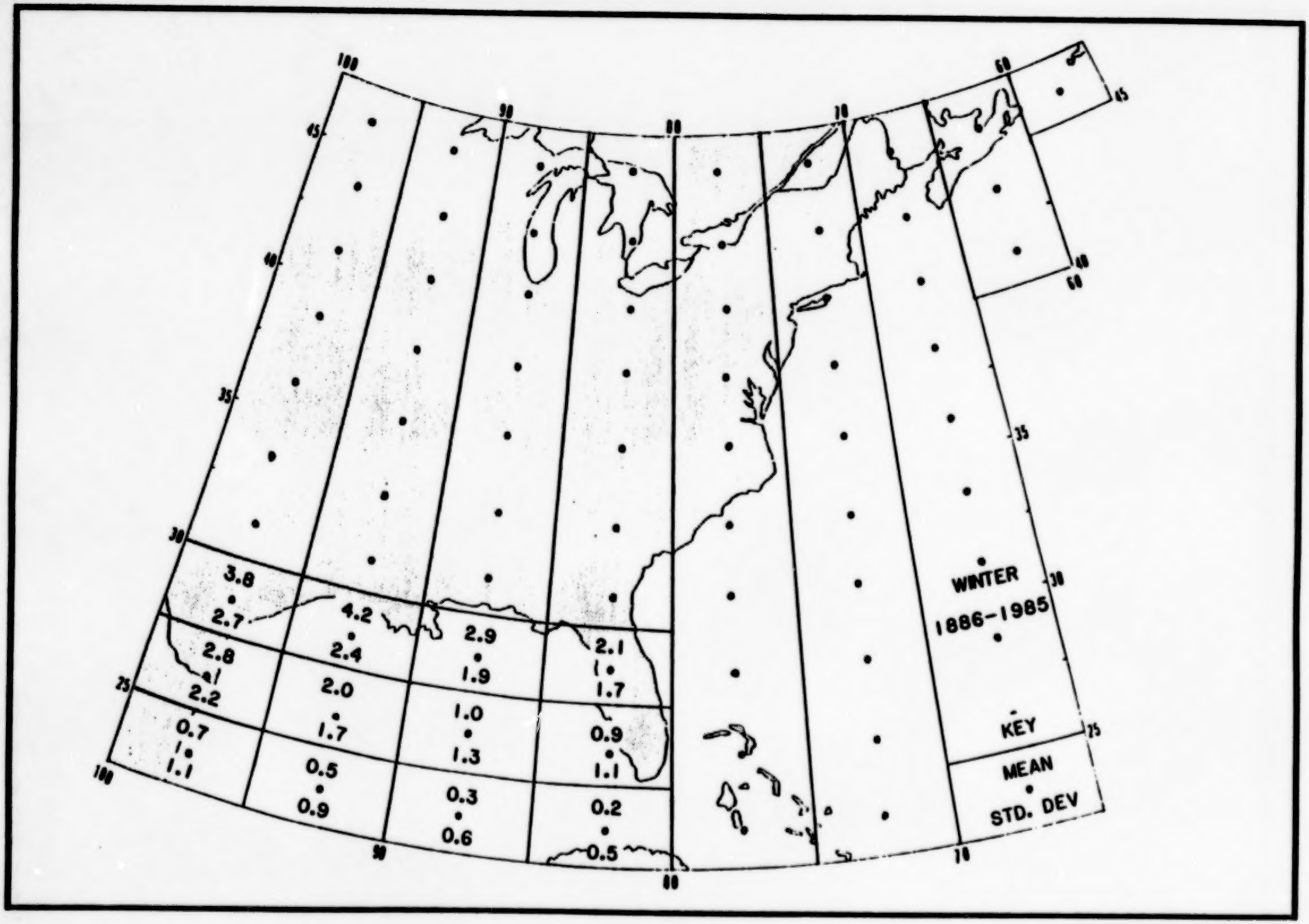

Figure 2.7.1-1 Mean and standard deviation for each of 12 grid cells identified for this study for the winter season for the 100-year period 1886-1985 (base map adapted from Hayden, 1981).

Class 4 and 5 storms are generally low pressure centers, which originate west of 85°W and south of 35°N, most frequently associated with cyclogenesis along a cold or stationary front positioned over the Gulf of Mexico. These storms usually form in conjunction with a strong, southeasterly moving continental anticyclone, and thus traverse the Gulf, crossing the Florida panhandle into the Atlantic Ocean. However, due to the presence of the anticyclone, these storms generally move rapidly through the Gulf, deepening quickly in the Atlantic before moving up the east coast (Bosserman and Dolan, 1968). This concept agrees favorably with the winter frontal frequencies of DiMego et al. (1976) presented in Section 2.7.3, where early winter months were characterized by a trough in the frequency patterns over the western Gulf, which gradually gave way to a more zonal pattern in late winter. This shift in frequency patterns details the move of the storm tracks (cyclogenesis) from the western Gulf to the central Gulf during the winter season.

In a more recent study, Johnson et al. (1986) used winter cyclogenesis data from the years 1972-1983 to quantify conditions surrounding cyclogenesis in the Gulf of Mexico region. Cyclogenesis was defined as occurring when there was at least 1 closed isobar in a 2 mb analysis. The study found an average of 11.9 cyclones per year occurred, slightly higher than the 11 storms per year found by Saucier (1949) in his landmark paper on Texas, West Gulf cyclones. The difference in the 2 numbers (11.0 and 11.9) was attributed most likely to better data quality, greater data quantity and/or the shortness of the data set used in their study. The regions of cyclogenesis agree favorably with the findings presented earlier (Saucier, 1949), where Johnson et al. (1986) found 71% of the storms identified formed in an area between 23°N, 96°W and 29°N, 90°W. In addition, approximately half (48%) of the total number of cyclones studied developed in a smaller region between 25°N, 98°W and 28°N and 93°W. (Johnson et al., 1986).

Using principal components analysis (PCA), described in Section 2.3.4, on the 100-year 12-grid cell data matrix of cyclone data for the winter season, 56.6% of the total system variance could be explained by the first 2 principal component eigenvectors (E1 and E2, respectively). Eigenvector 1 (E1) explained 38.1% of the variance in the cyclone track data, while E2 accounted for 18.5%. Both of these eigenvectors passed the significance test guidelines provided by Overland and Priesendorfer (1982). The first principal component (or Empirical Orthogonal Function, EOF) can be classified as a presence/absence function for cyclones in the Gulf of Mexico. Figure 2.7.1-2 shows the spatial distribution of E1, which is positive over the entire study region. Analysis of the secular trends (Figure 2.7.1-3) in the eigenvector case weightings details that during years having positive loadings, cyclone numbers are increased in the Gulf, while during years having negative weightings, storm numbers are somewhat reduced. Eigenvector 1 also shows the preferred storm track across the western to central Gulf, implying a crossing of the Florida panhandle, as was delineated earlier in work performed by Bosserman and Dolan (1968). This finding most closely resembles their storm track 4.

Eigenvector 2 displays a mixed sign convention over the region, being strongly negative in the western and north-central Gulf, while remaining very positive in the central and southeastern regions (Figure 2.7.1-4). The secular case weightings (Figure 2.7.1-5) show some type of cyclical behavior in E2, ranging from predominantly negative values between approximately 1885 and 1925, and becoming totally positive in the last 25 years of the time series. The cyclicity

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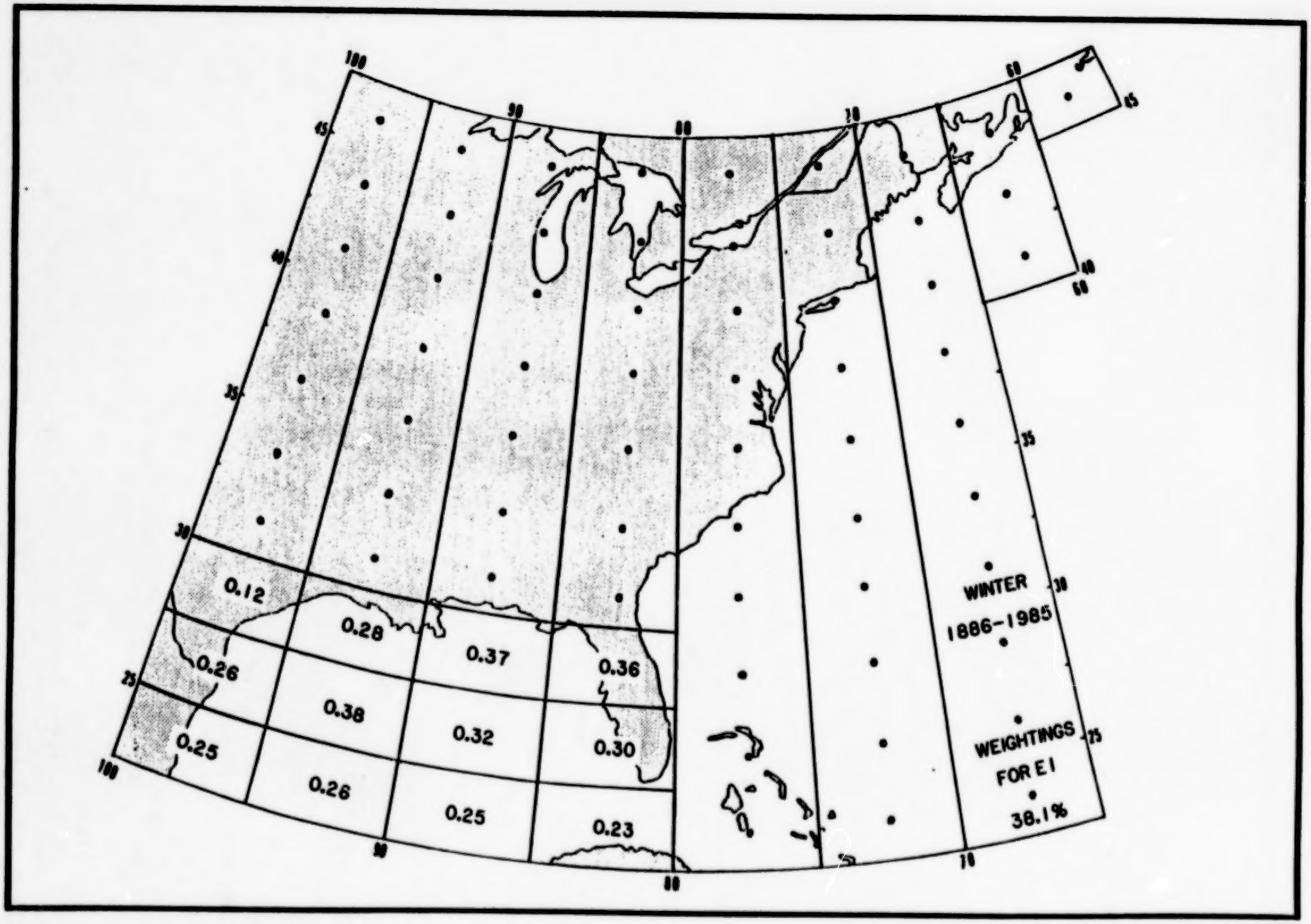

Figure 2.7.1-2 Scores for the first principal component eigenvector (E1) for the winter season for the 100-year period 1886-1985. E1 accounts for 38.1% of the total variance (base map adapted from Hayden, 1981).

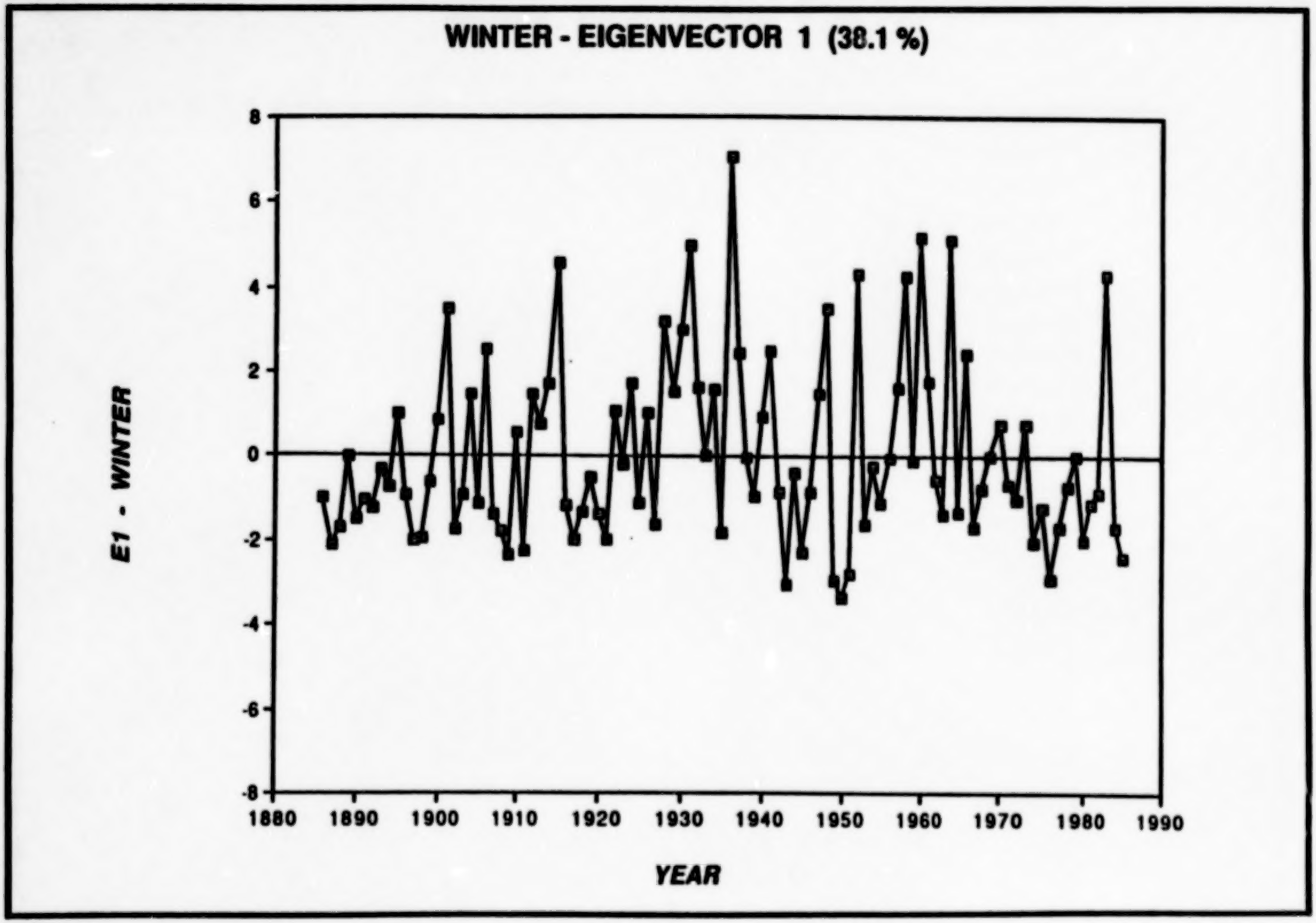

Figure 2.7.1-3 Secular trends in E1 over the 100 year-period 1886-1985.

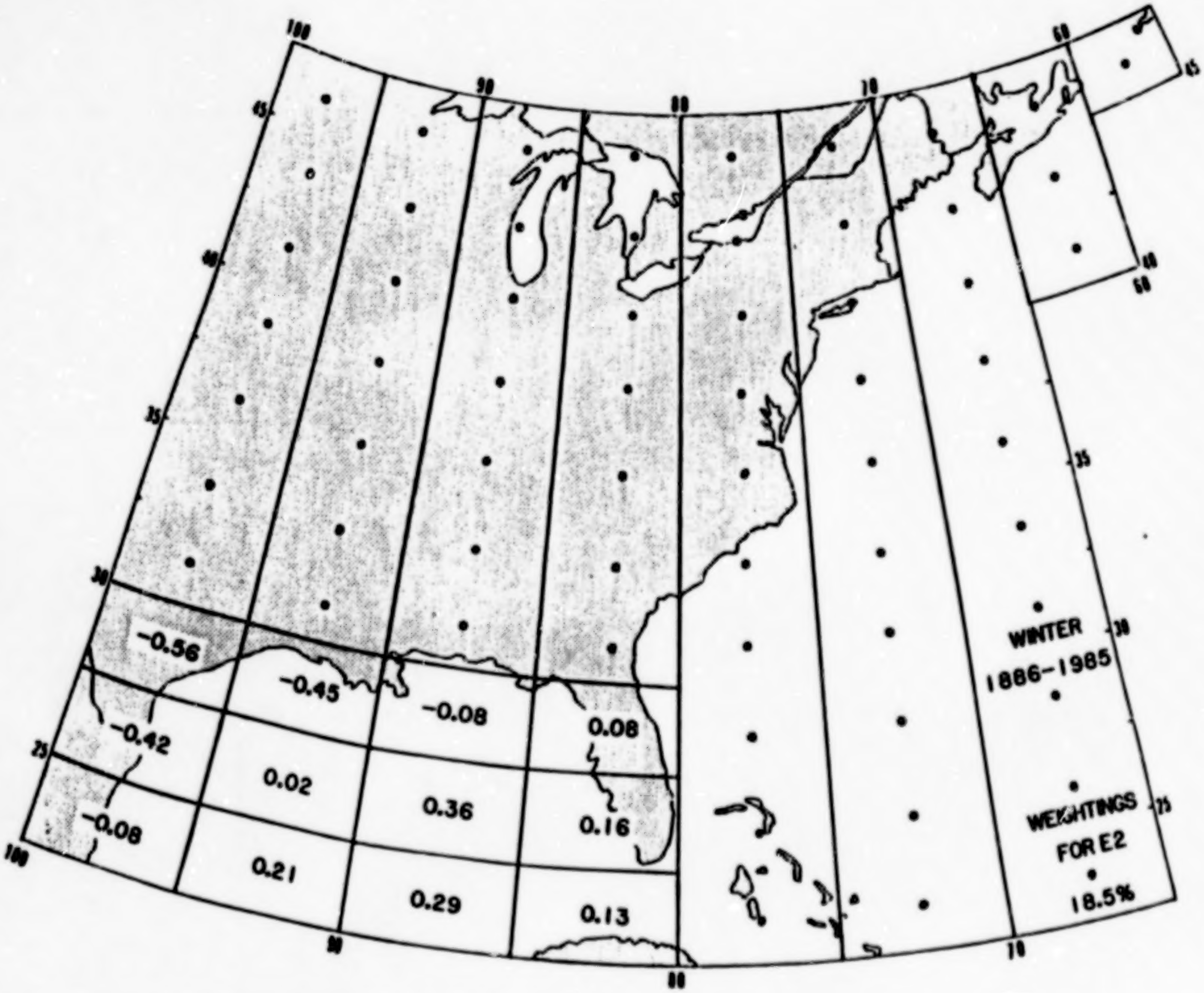

Figure 2.7.1-4 Scores for the second principal component eigenvector (E2) for the winter season for the 100-year period 1886-1985. E2 accounts for 18.5% of the total variance (base map adapted from Hayden, 1981).

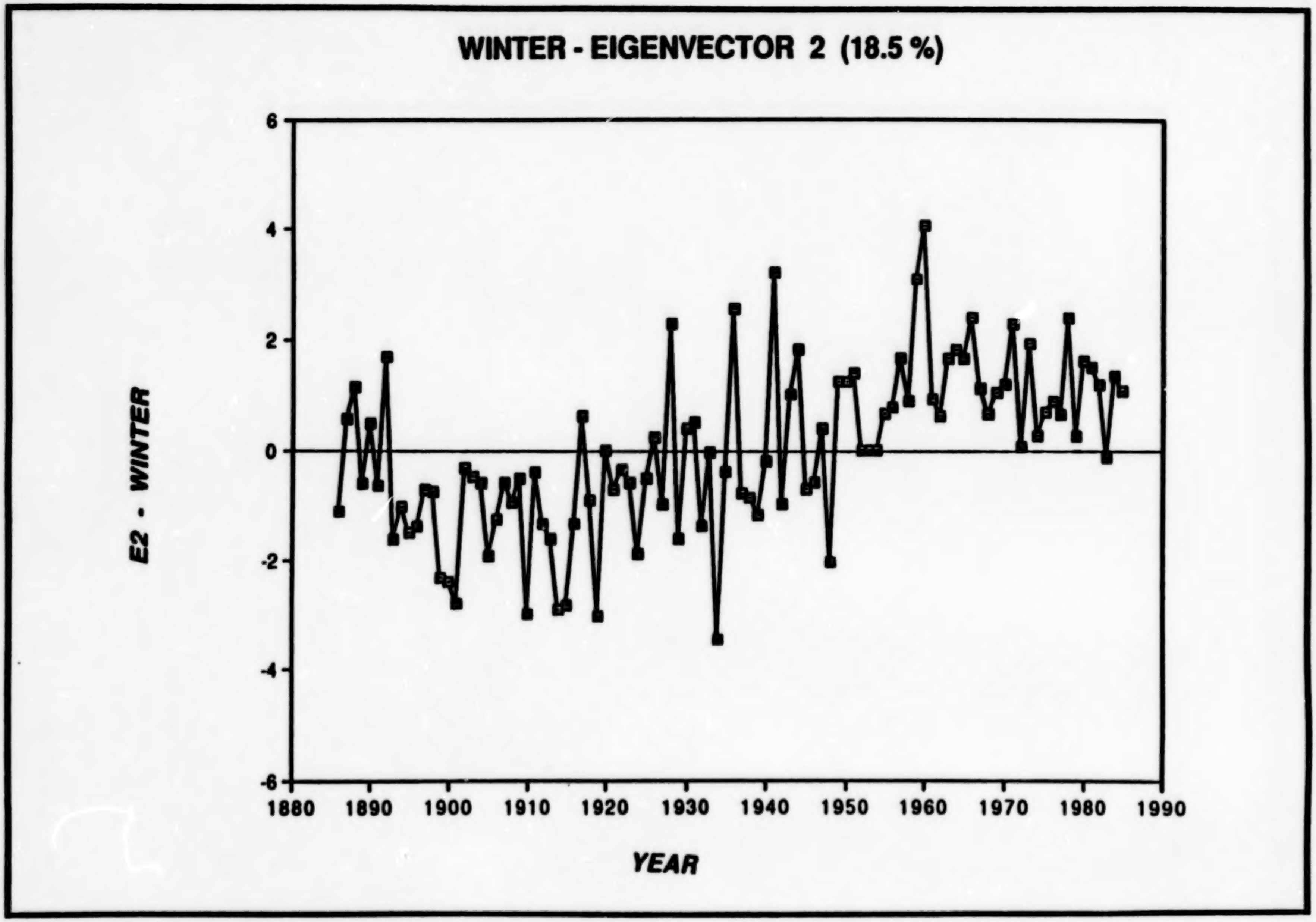

Figure 2.7.1-5 Secular trends in E2 over the 100-year period 1886-1985.

of this vector is best approximated by an 11-point (year) moving average (Figure 2.7.1-6). The physical interpretation of this vector shows that when E2 is negative, the western Gulf tends to be more active in terms of cyclones, while when E2 is positive, the central and Gulf tend to be more active. Thus, E2 can be classified as the "see-saw" vector of cyclonic activity during the winter months in the Gulf of Mexico.

In analyzing the summer cyclone data, using the 100-year 12-grid cell matrix, with PCA, the frequency maxima have all shifted into the central and southeastern Gulf of Mexico, reflecting the importance of tropical systems to the storm track climatology (Figure 2.7.1-7). Once again, as in the winter months, the first principal component eigenvector (E1) shows the relative frequency of storms in the Gulf region (Figure 2.7.1-8), where years with positive weightings reflect higher frequency counts and negative case weightings show a reduced number of storms influencing the region (Figure 2.7.1-9). Eigenvector 1 can account for 30.2% of the total system variance, while E2 explains 19.0%. Once again, both eigenvectors pass the significance test guidelines outlined by Overland and Priesendorfer (1982). Eigenvector 2 (Figure 2.7.1-10), showing spatial variation in sign convention across the Gulf (i.e., negative in the western Gulf and positive in the eastern Gulf), explains the relative contribution of tropical cyclones to overall system variance (Figure 2.7.1-11). Figure 2.7.1-12 shows the secular case weightings for E2 with an 11-point (year) running average superimposed on the graph. From this figure it is easily discernible that a cycle exists between years of positive and negative secular case weightings. During negatively weighted years, E2 becomes positively weighted in the western and central Gulf showing increased extratropical influence, while becoming negatively weighted in the southeastern Gulf, reflecting the decreased importance of tropical systems. When the secular weightings are positive, E2 becomes strongly positive in the southeastern Gulf, showing the increased importance of tropical cyclones. The negative values over the past 2 decades (Figure 2.7.1-11) in the secular weightings on E2, correspond nicely to the decrease in tropical cyclone frequencies discussed earlier in this section.

In analyzing the 100-year, 12-grid cell data matrix, both transitional months April (Figure 2.7.1-13) and November (Figure 2.7.1-14) showed frequencies < 1 in each grid cell. Across the northernmost grid cells (1, 4, 7 and 10), the November frequencies were greater than or equal to the April values because of the penetration of frontal systems into the Gulf during November and the ensuing cyclogenetic activity. The central 4 grid cells (2, 5, 8 and 11) have identical frequencies in both months, except for cell 11, which is slightly higher in November. The increase over the southeastern Gulf of Mexico is most likely due to the minimal influence tropical cyclones have in this region during November. The lowest 4 grid cells (3, 6, 9 and 12) have varying values over the 100-year period. The eastern-most 2 cells (9 and 12) show the November increase in frequency, while the western-most grid cell (3) is slightly higher in April. The former is probably related to tropical cyclone activity in the Florida Straits, and the latter to late winter extratropical activity along the Texas coast. Grid cell 9 shows no change in frequency between April and November. However, storm tracks during the transition months are clearly not as important to the climatology as they are in the summer and winter months.

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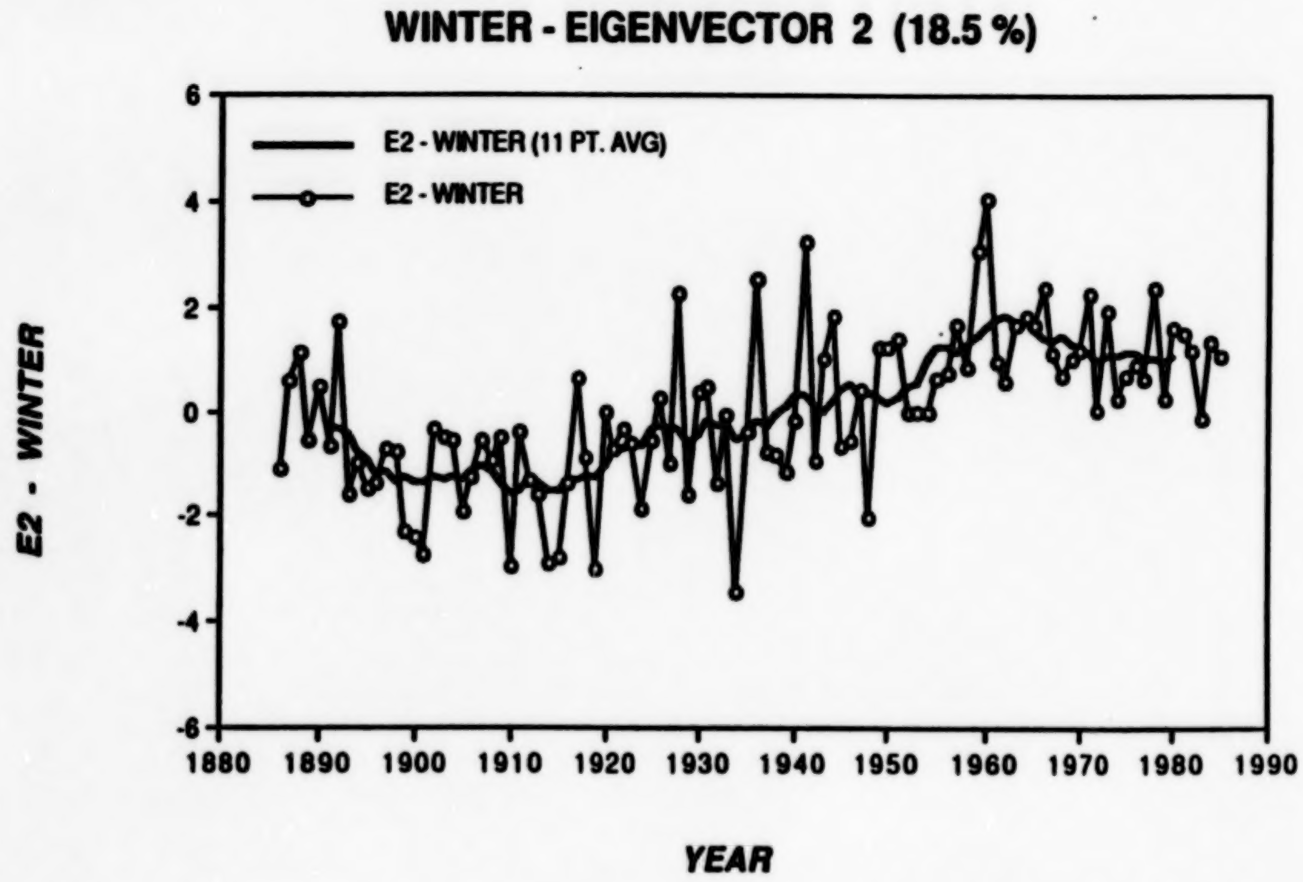

Figure 2.7.1-6 Secular trends in E2 over the 100-year period 1886-1985 with an 11 point running average (smooth line) superimposed over the secular case weightings (open circles).

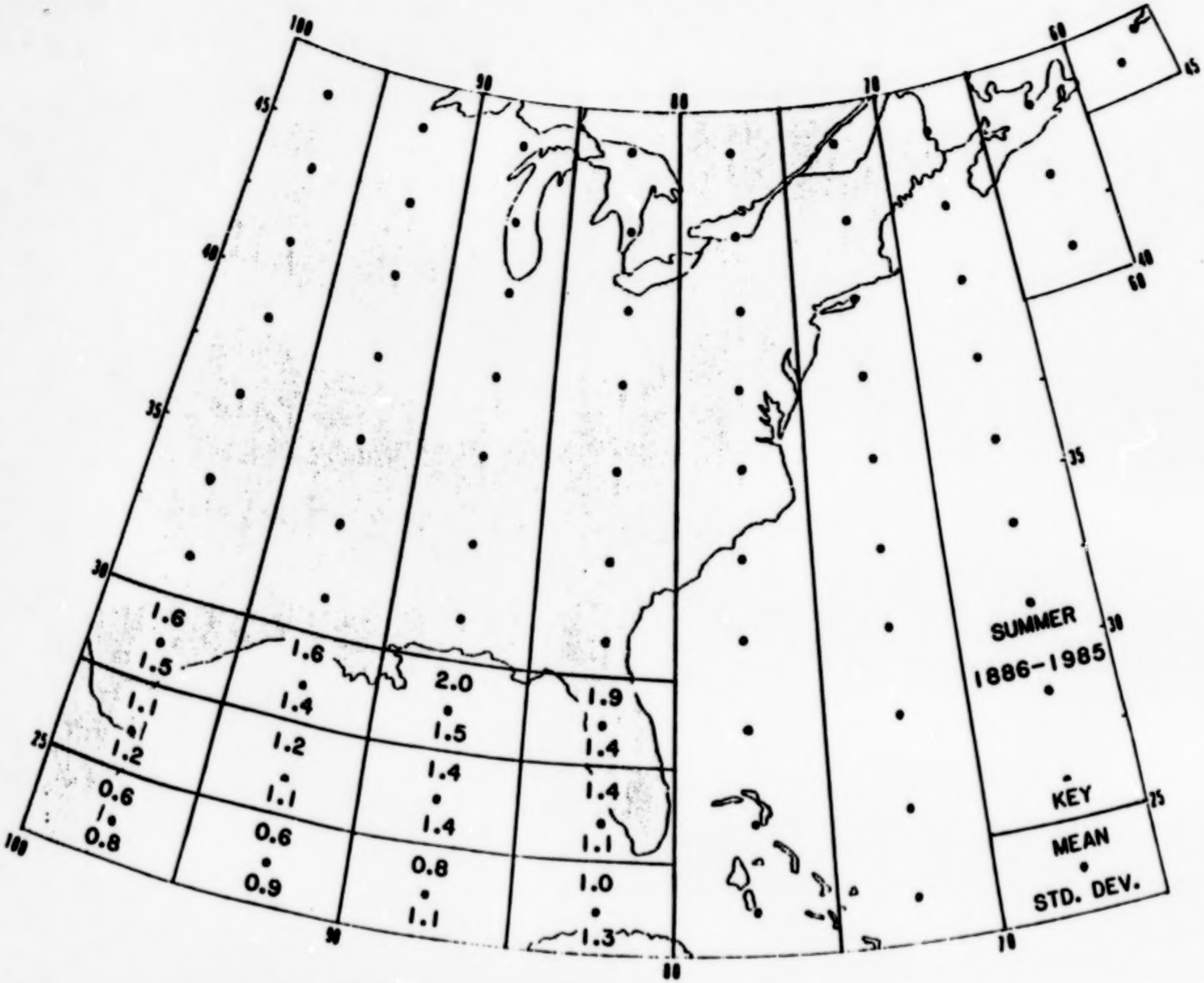

Figure 2.7.1-7 Mean and standard deviation for each of 12 grid cells identified for this study for the summer season for the 100-year period 1886-1985 (base map adapted from Hayden, 1981).

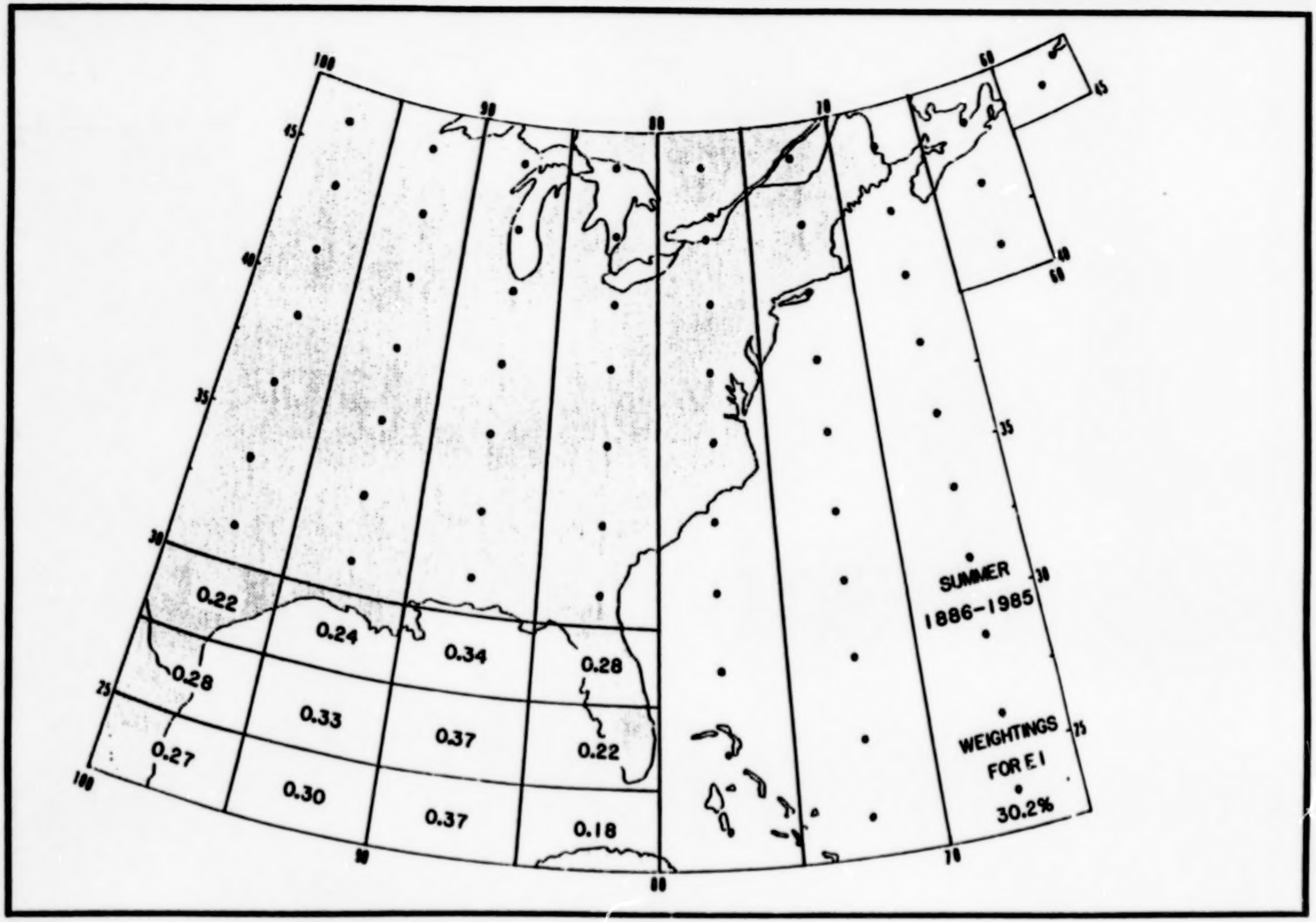

Figure 2.7.1-8 Scores for the first principal component eigenvector (E1) for the summer season for the 100-year period 1886-1985. E1 accounts for 30.2% of the total variance (base map adapted from Hayden, 1981).

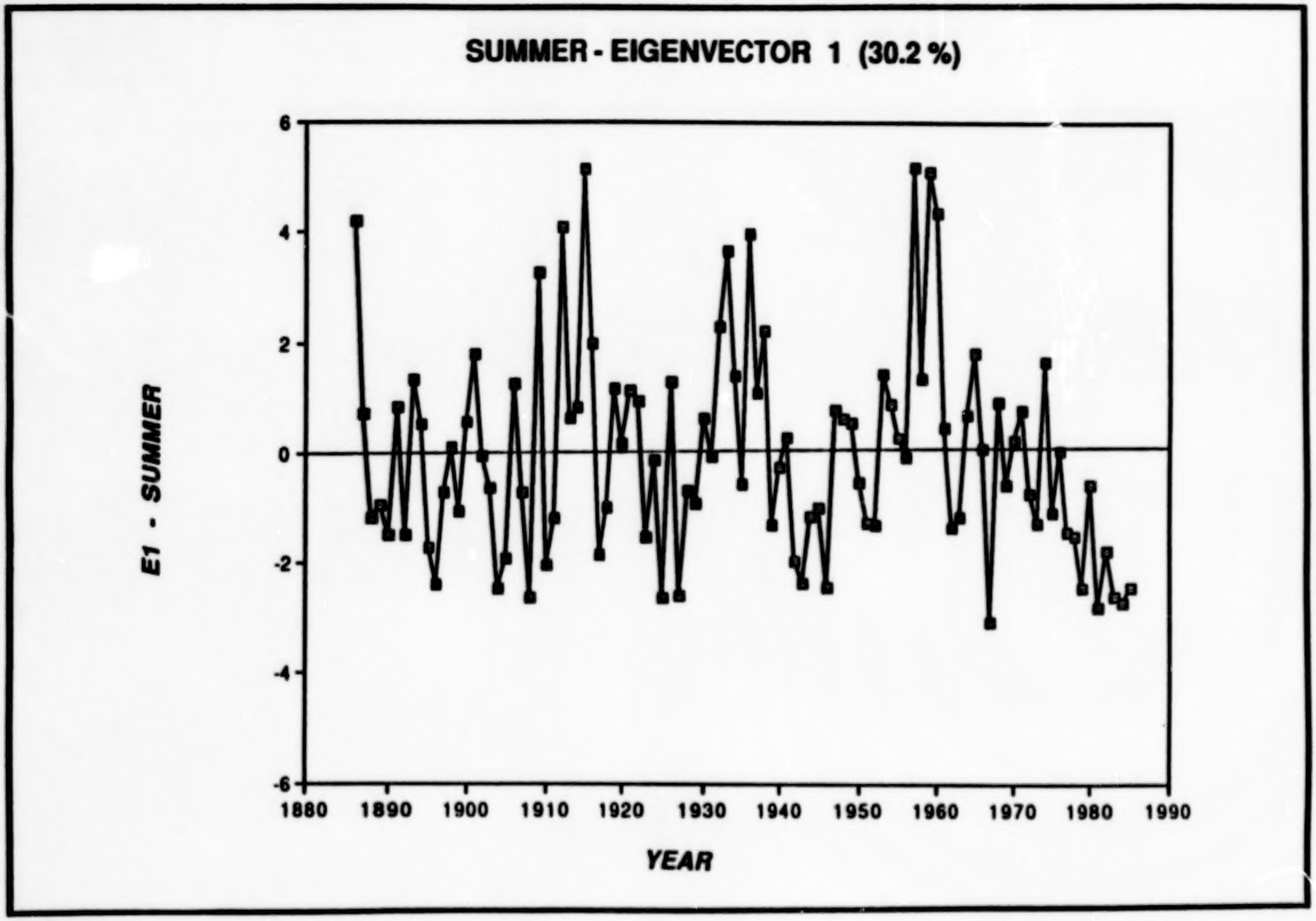

Figure 2.7.1-9 Secular trends in E1 over the 100-year period 1886-1985.

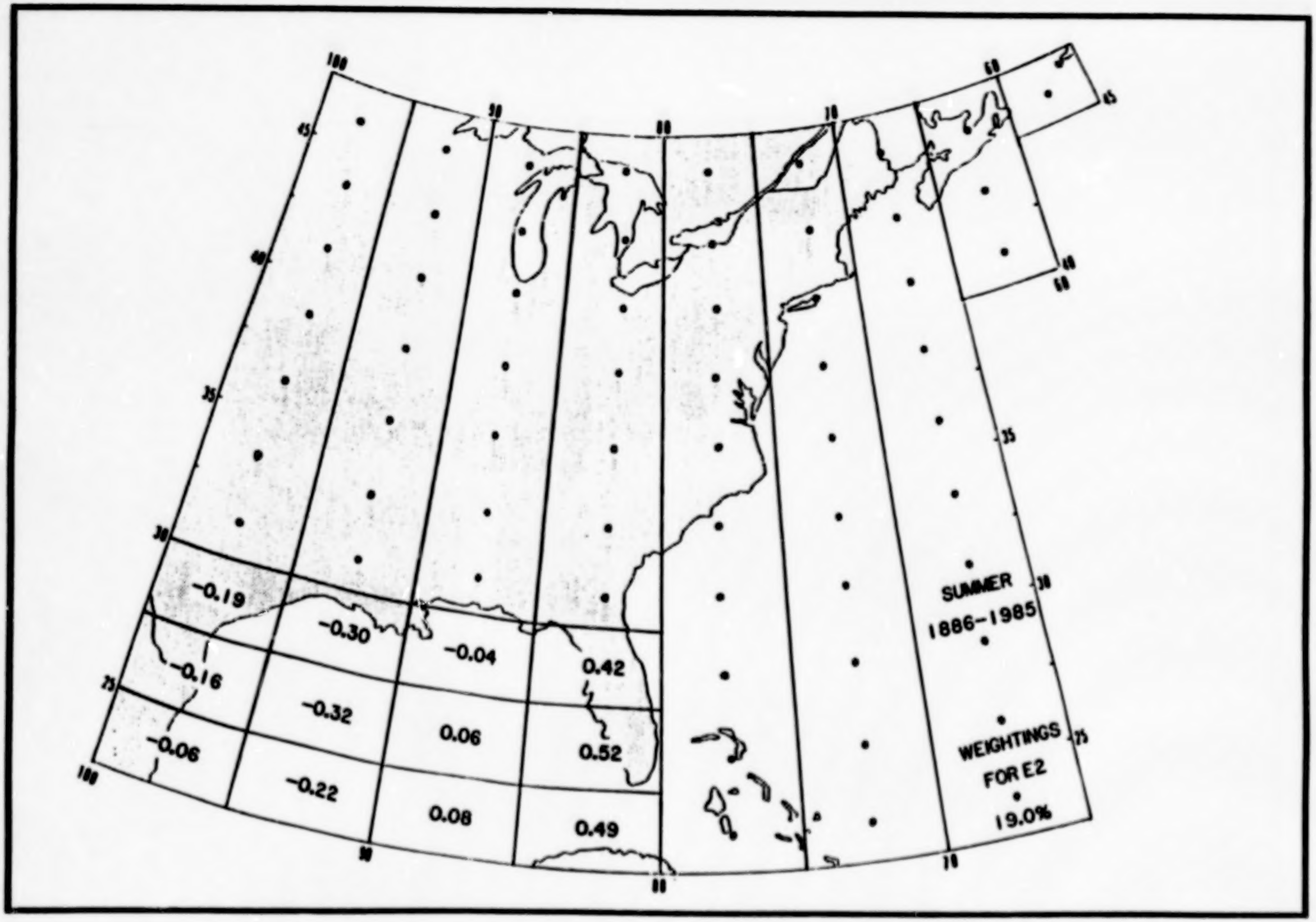

Figure 2.7.1-10 Scores for the second principal component eigenvector (E2) for the summer season for the 100-year period 1886-1985. E2 accounts for 19.0% of the total variance (base map adapted from Hayden, 1981).

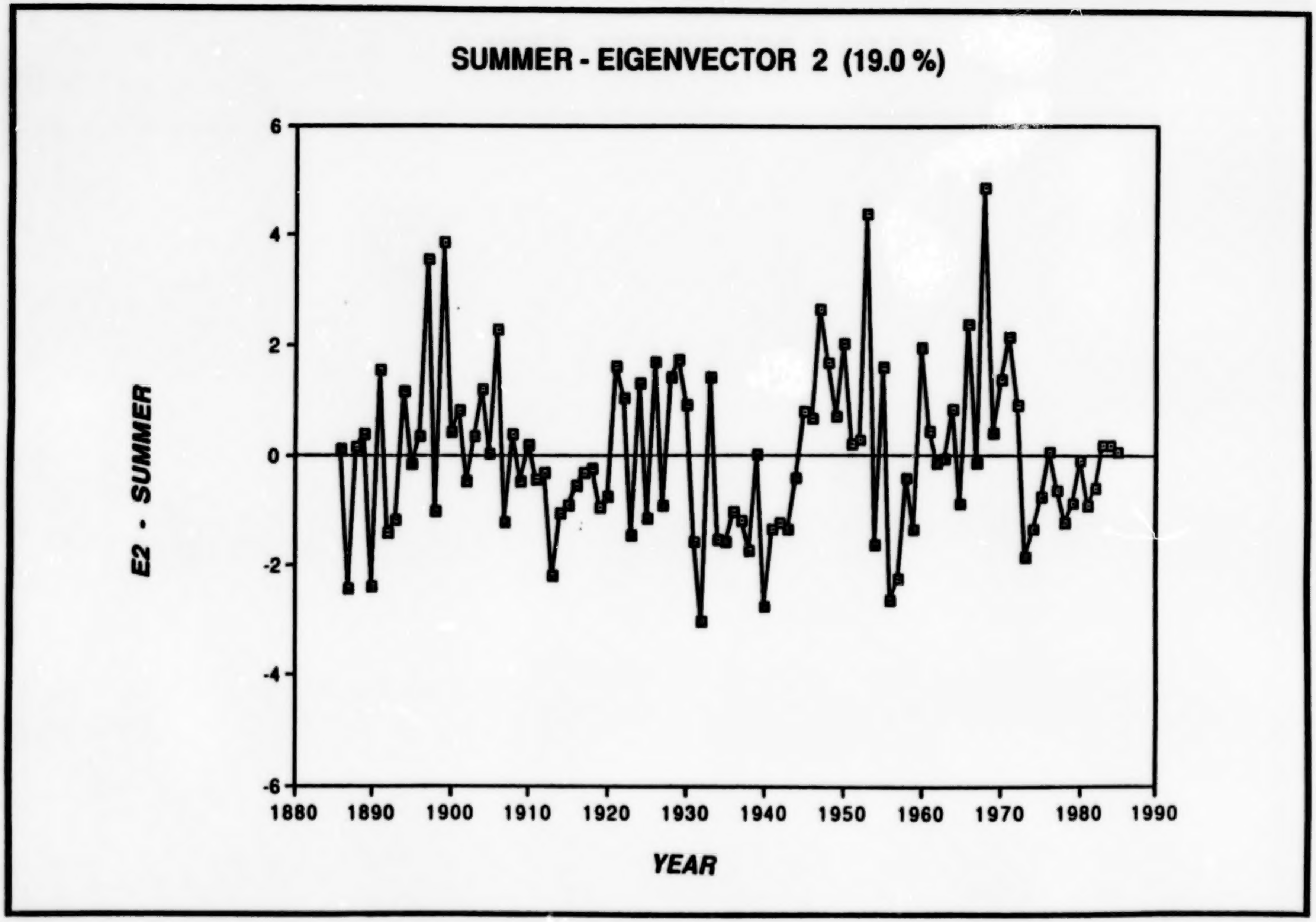

Figure 2.7.1-11 Secular trends in E2 over the 100-year period 1886-1985.

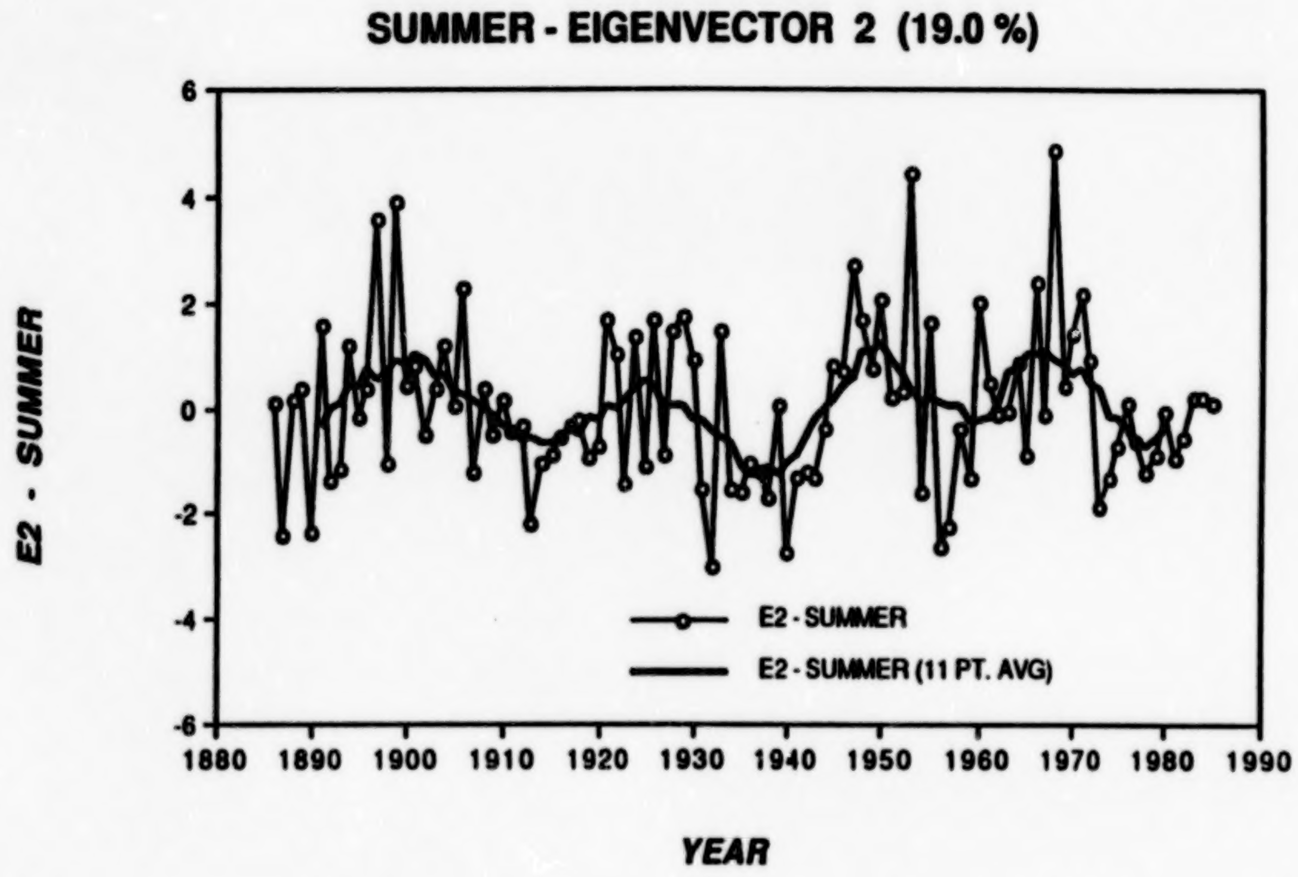

Figure 2.7.1-12 Secular trends in E2 over the 100-year period 1886-1985, with an 11 point running average (smooth line) superimposed over the secular case weightings (open circles).

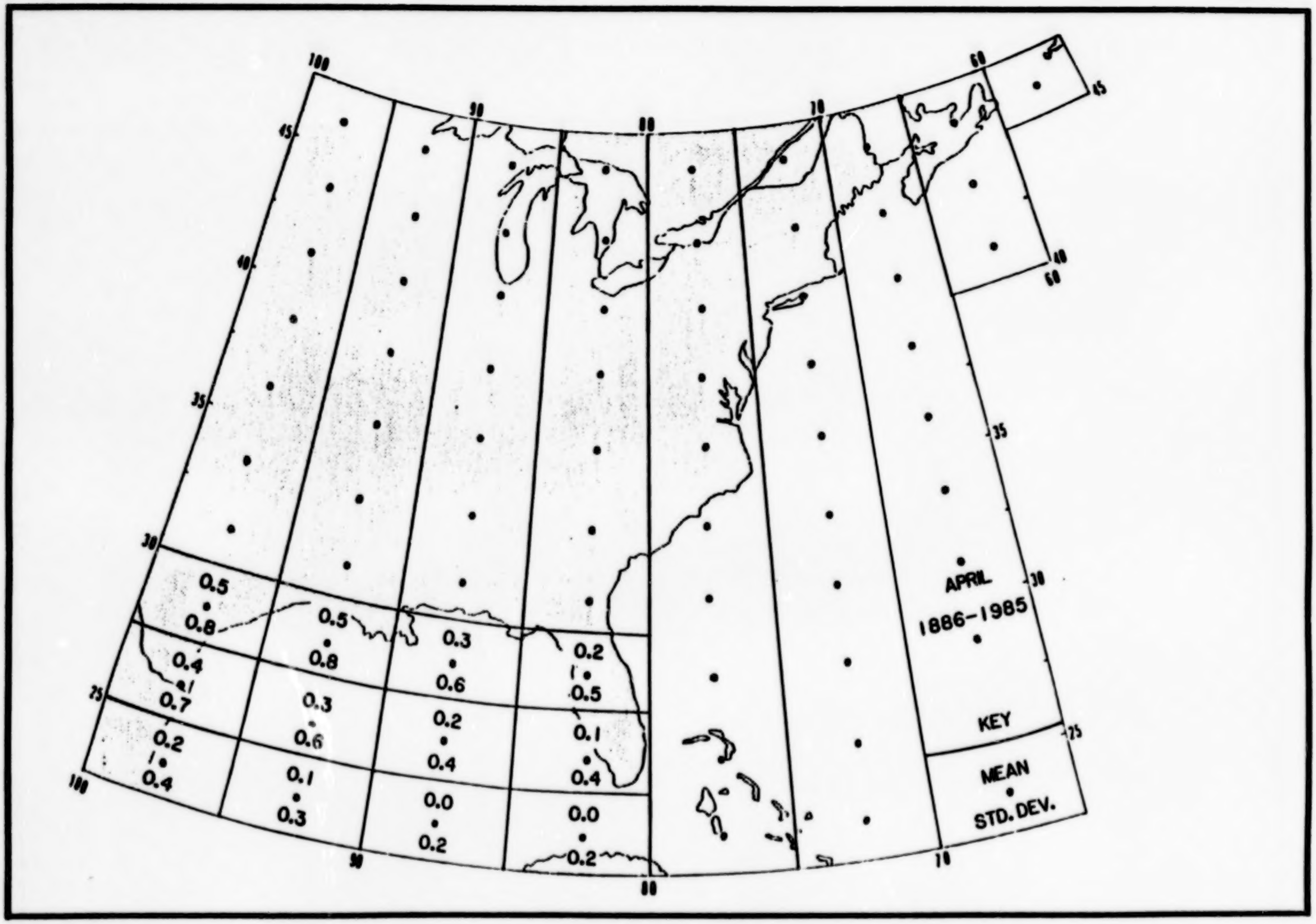

Figure 2.7.1-13 Mean and standard deviation for each of 12 grid cells identified for this study for the April transition period for the 100-year period 1886-1985 (base map adapted from Hayden, 1981).

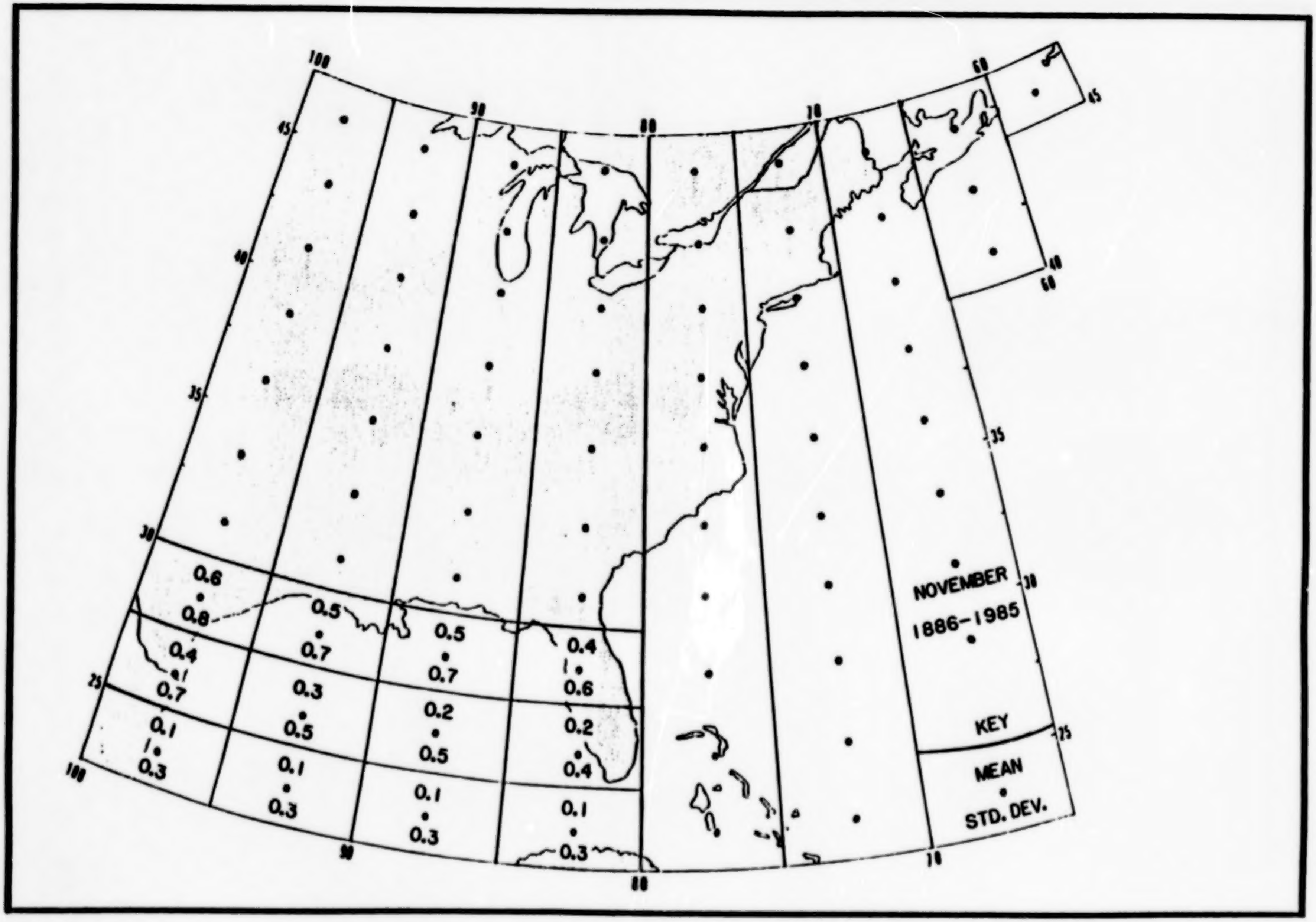

Figure 2.7.1-14 Mean and standard deviation for each of 12 grid cells identified for this study for the November transition period for the 100-year period 1886-1985 (base map adapted from Hayden, 1981).

2.7.2 Tropical Cyclones

The summer storm track climatology is determined by the frequency and direction of the tropical cyclone systems. These systems, much less frequent than their wintertime extratropical counterparts, are much more intense and generally slower moving. Figure 2.7.2-1 shows the distribution of hurricanes versus all tropical cyclones for the entire North Atlantic Basin for the period 1886-1986. A total of 845 topical cyclones comprise the current version of HURDAT used in this study, giving an annual average of 8.37 storms. Of the 845 systems studied, 496 (or 58.7%) of these reached hurricane intensity at some stage during their life cycle. Figure 2.7.2-2 is a graph depicting the total number of storms, with an 11-point running average superimposed on the data. This clearly shows the decline in tropical activity during the late 1800's and its rapid increase between approximately 1925-1940. The cyclone frequency appears to have been relatively stable up through the mid-1970's, where evidence for a decrease in tropical cyclone frequencies appears. A similar pattern is recognizable in the number of storm days per year (Figure 2.7.2-3). A total of 5,449 storm days were calculated for the 101-year data series, yielding a mean value of 53.95 storm days per year, or the average storm lasting approximately 6.45 days (from 5,449 storm days divided by 845 total storms.) Figure 2.7.2-4 shows the number of all tropical systems crossing the U.S. coastline (i.e., making landfall) during the 101-year period, plotted versus the total number of systems detected. The general increase in storm frequency in the 1920's-1930's almost masks the near constant trend in the number of landfalling storms. However, during the past 2-2½ decades, a definite decrease in landfalling storms is apparent.

Of the total number of storms reported (845), 376 of these tropical systems entered the 10° latitude by 20° longitude box (20°N, 100°W; 30°N, 80°W) defined as our Gulf of Mexico data window (Figure 2.3.4-1). Partitioning between inside/outside the window yielded an annual mean of 3.72 storms per year entering the Gulf. Thus, approximately half (44.5%) of all tropical systems over this 101-year period have affected the Gulf of Mexico. Figure 2.7.2-5 shows this distribution graphically. The recent trend shows a general decrease in the percentage of total storms affecting the Gulf region over approximately the last 40-45 years. The period between 1910-1935 shows the strongest percentage of total storms affecting the Gulf, while prior to this time, the agreement is somewhat less. Of the 5,449 total storm days registered for the North Atlantic Basin over the period 1886-1986, 1,784 days (or 32.7%) were when tropical systems were inside the data window in this study (Figure 2.7.2-6). Based on this calculation, the Gulf of Mexico experiences on average 17.66 storm days per year, with the average storm residing in the basin for approximately 4.75 days. Thus, it can easily be seen that the tracks, motion and intensity of these tropical systems play a crucial role in the overall climatology of the Gulf of Mexico.

Following the work of Neumann and Pryslak (1981), a detailed analysis of tropical cyclone frequency, motion and track is presented in Figures 2.7.2-7 through 2.7.2-9a-b. This analysis covers the period May 1 through November 30 for 1899-1978, for all storms having 1-minute maximum sustained winds > 34 knots. The motion figure details the vector speed (knots) and direction toward which the storms are moving, averaged over each 2½° latitude/longitude box. The storm track diagram shows all storm tracks used in the computations, where the dashed lines refer to portions of the cyclone tracks which do not meet either the wind speed or temporal criteria. The tabular data is organized as follows: column A, index number of each 2½° latitude/longitude box (see Figure 2.3.4-2); column

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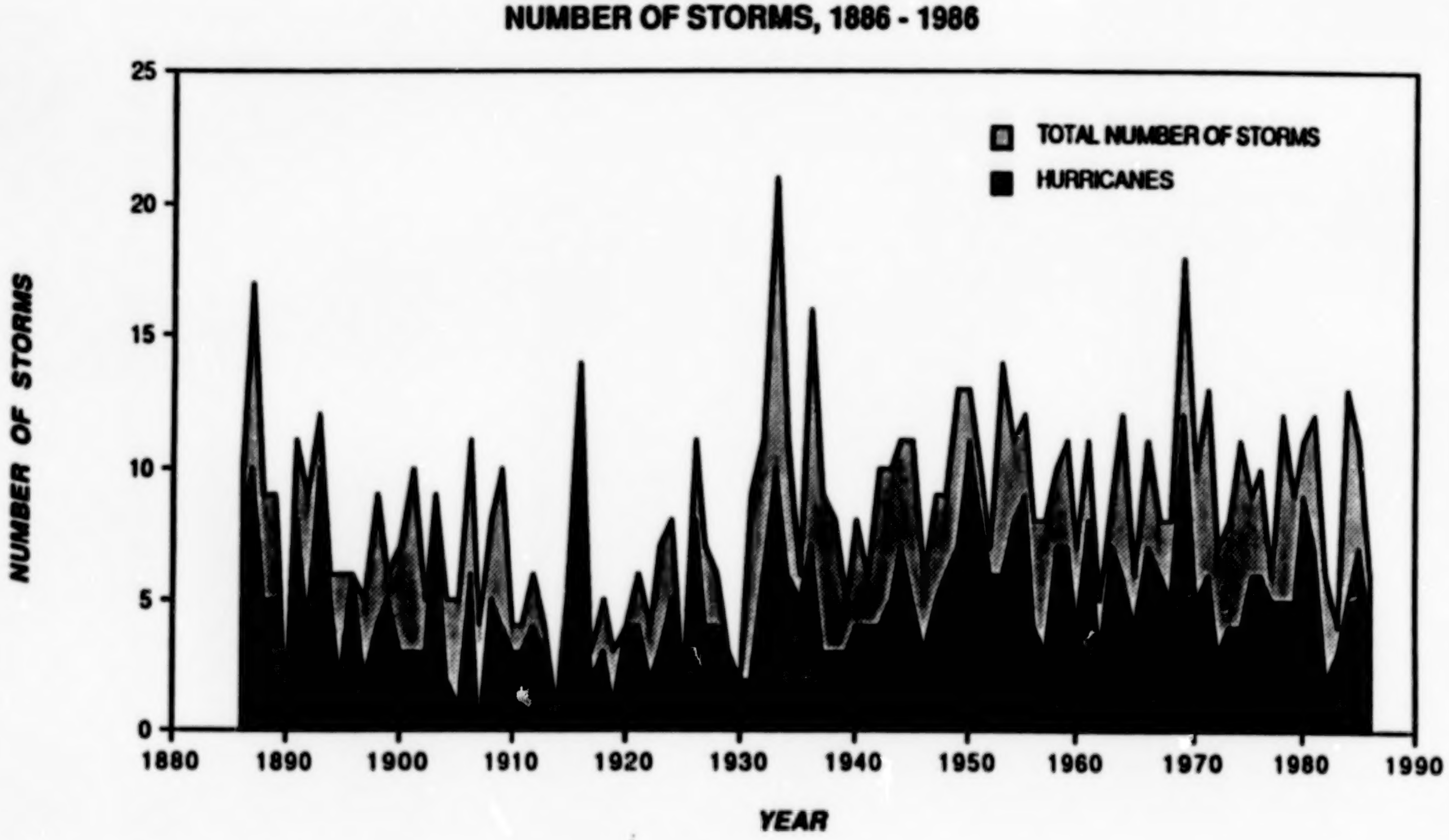

Figure 2.7.2-1 Distribution of all tropical cyclones in the North Atlantic Basin versus only hurricanes for the 101-year period 1886-1986.

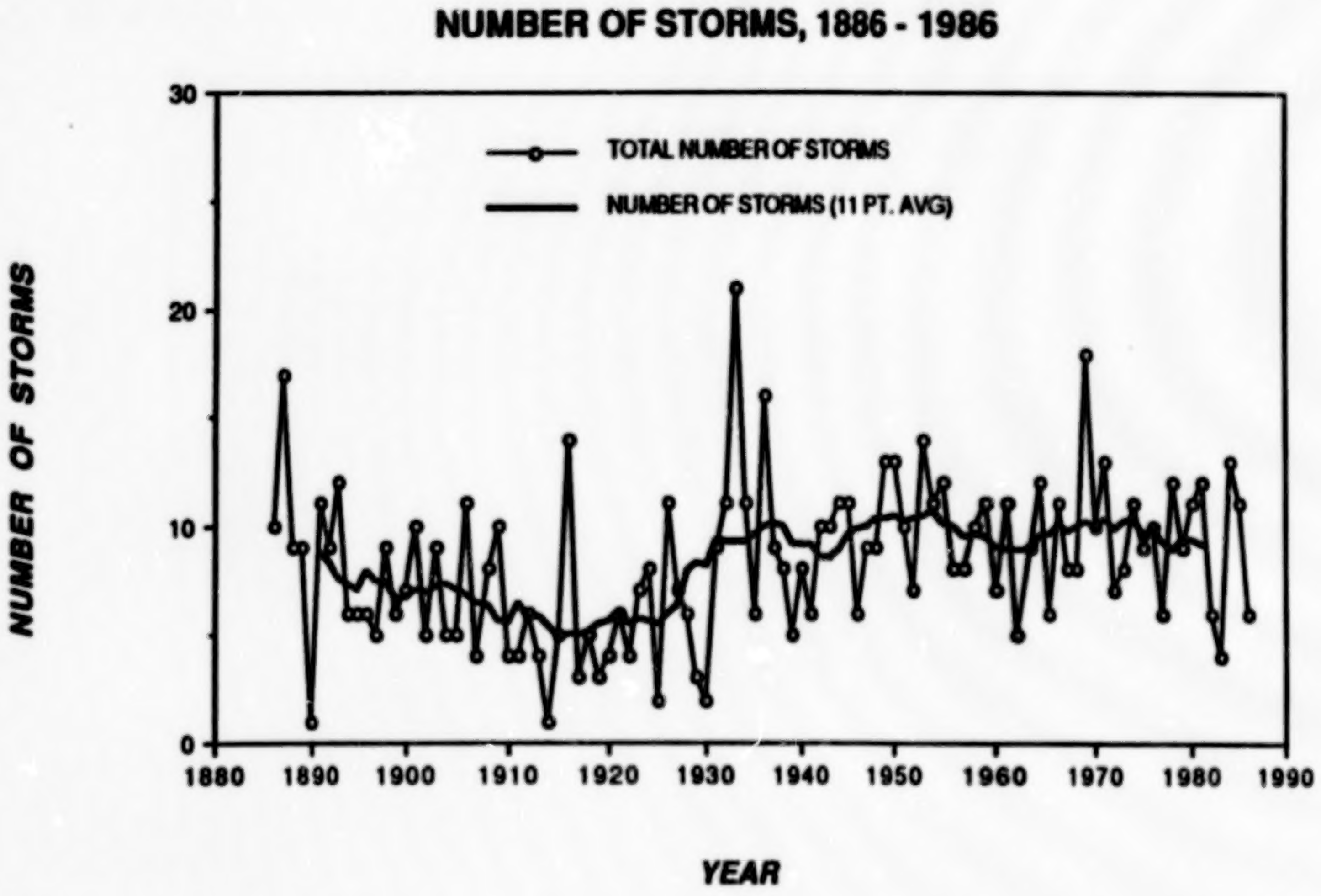

Figure 2.7.2-2 Distribution of all tropical cyclones in the North Atlantic Basin (open circles) with an 11-point moving average (smooth line) superimposed on the graph for the 101-year period 1886-1986.

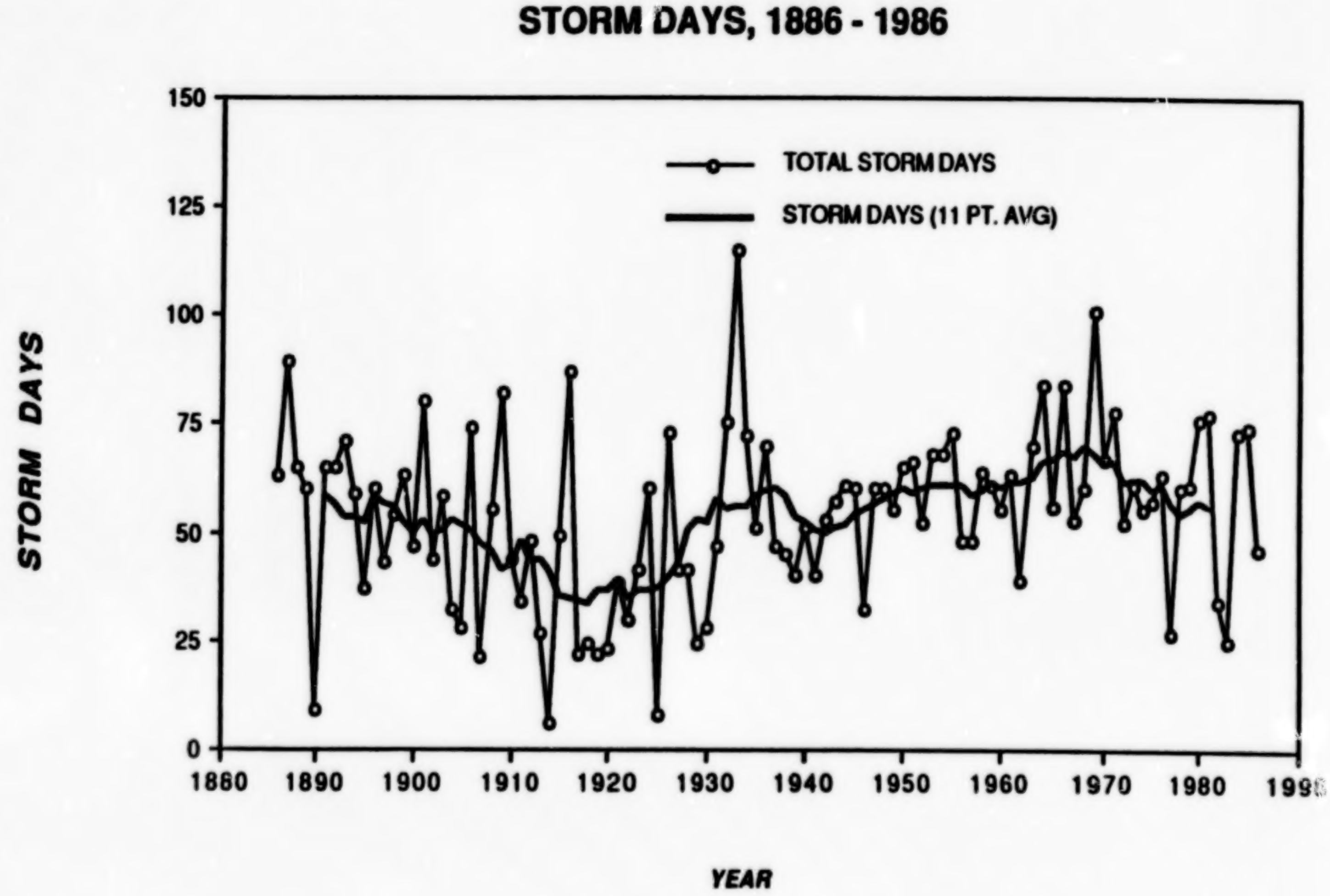

Figure 2.7.2-3 Distribution of the total number of storm days within the North Atlantic Basin for the period 1886-1986, with an 11-point moving average superimposed on the graph.

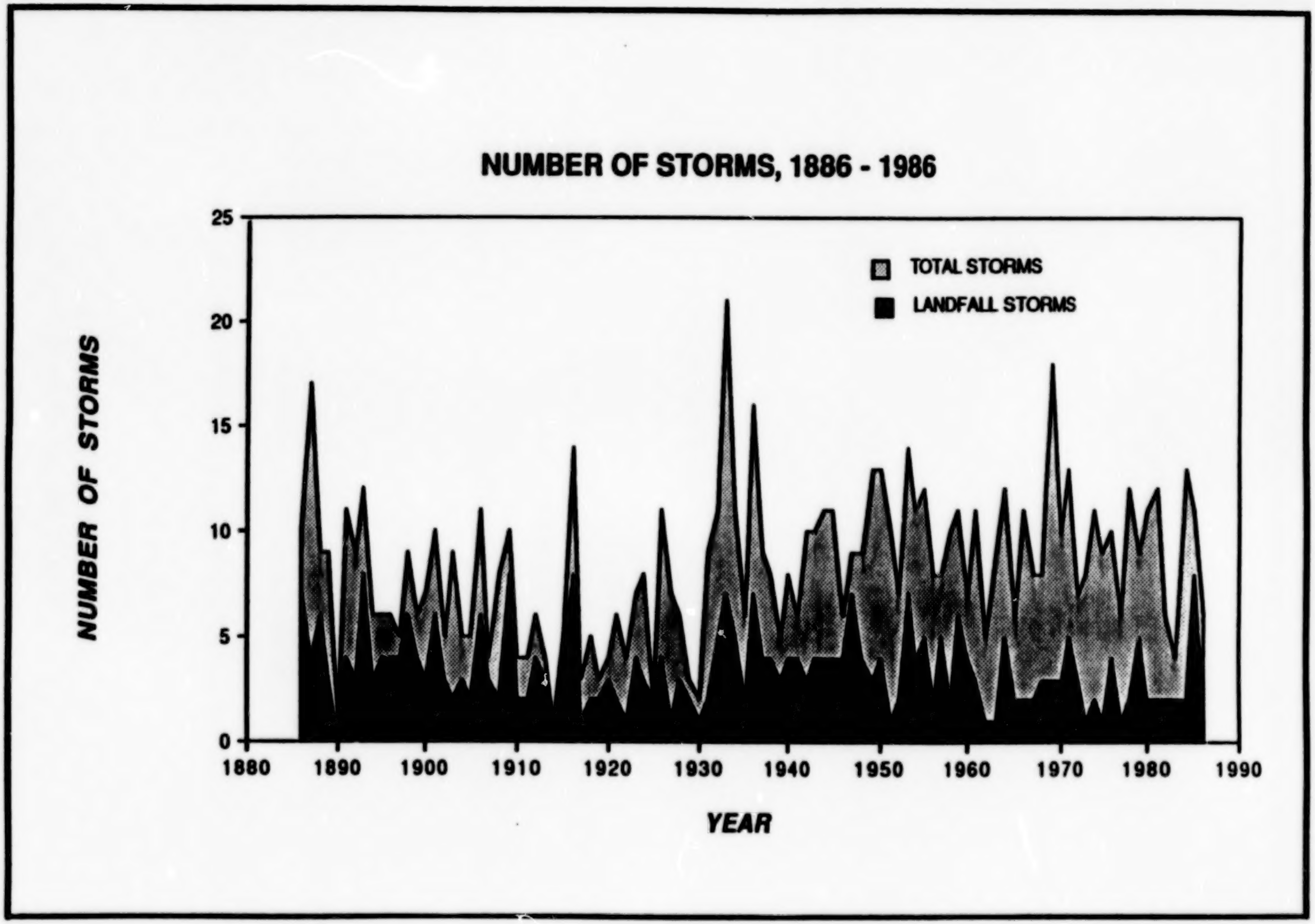

Figure 2.7.2-4 Distribution of all tropical cyclones in the North Atlantic Basin versus the number of storms making landfall (crossing the U. S. coastline) during the period 1886-1986.

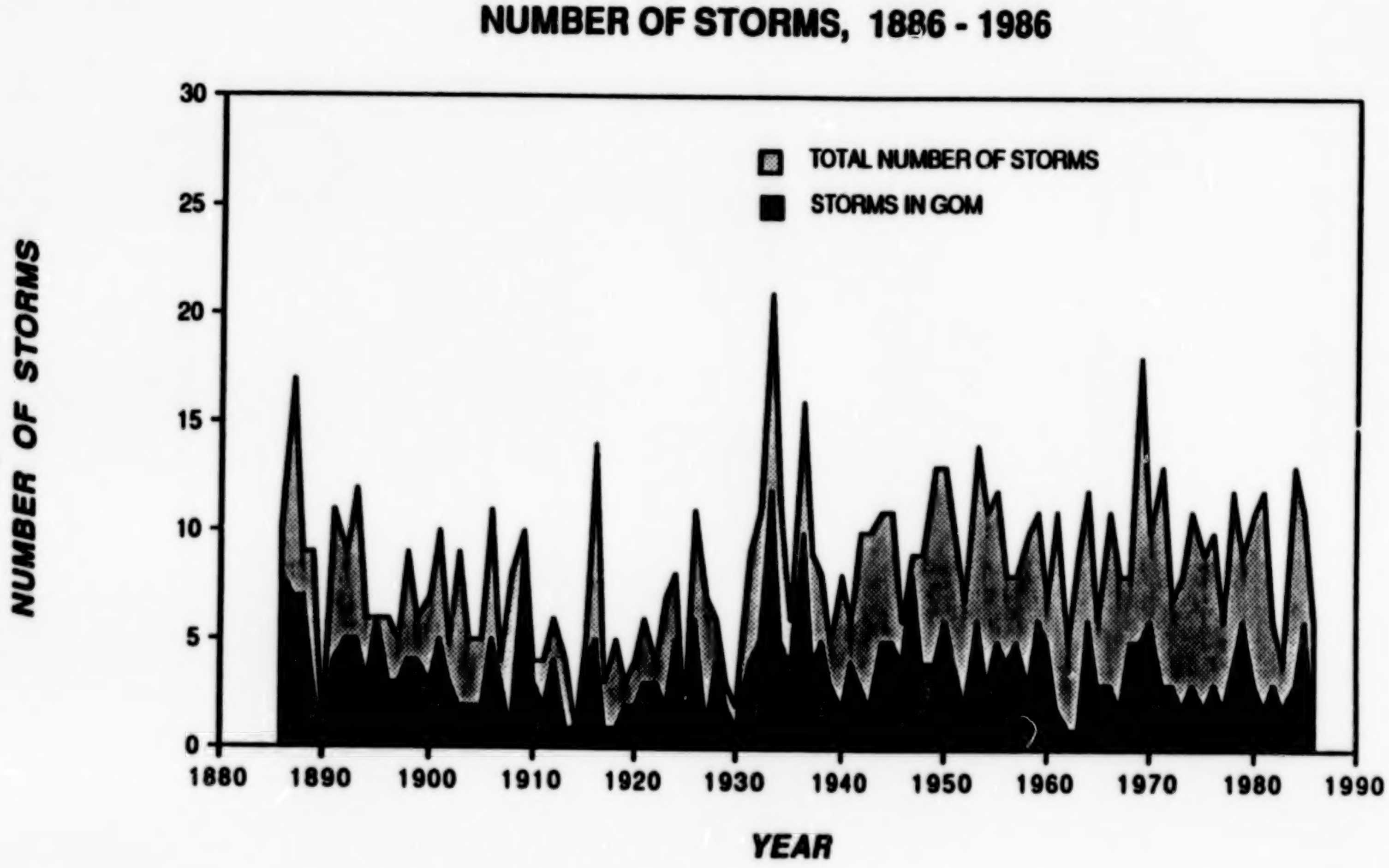

Figure 2.7.2-5 Distribution of all tropical cyclones in the North Atlantic Basin versus the number of cyclones entering the Gulf of Mexico data window (20°N, 100°W; 30°N, 80°W) for the period 1886-1986.

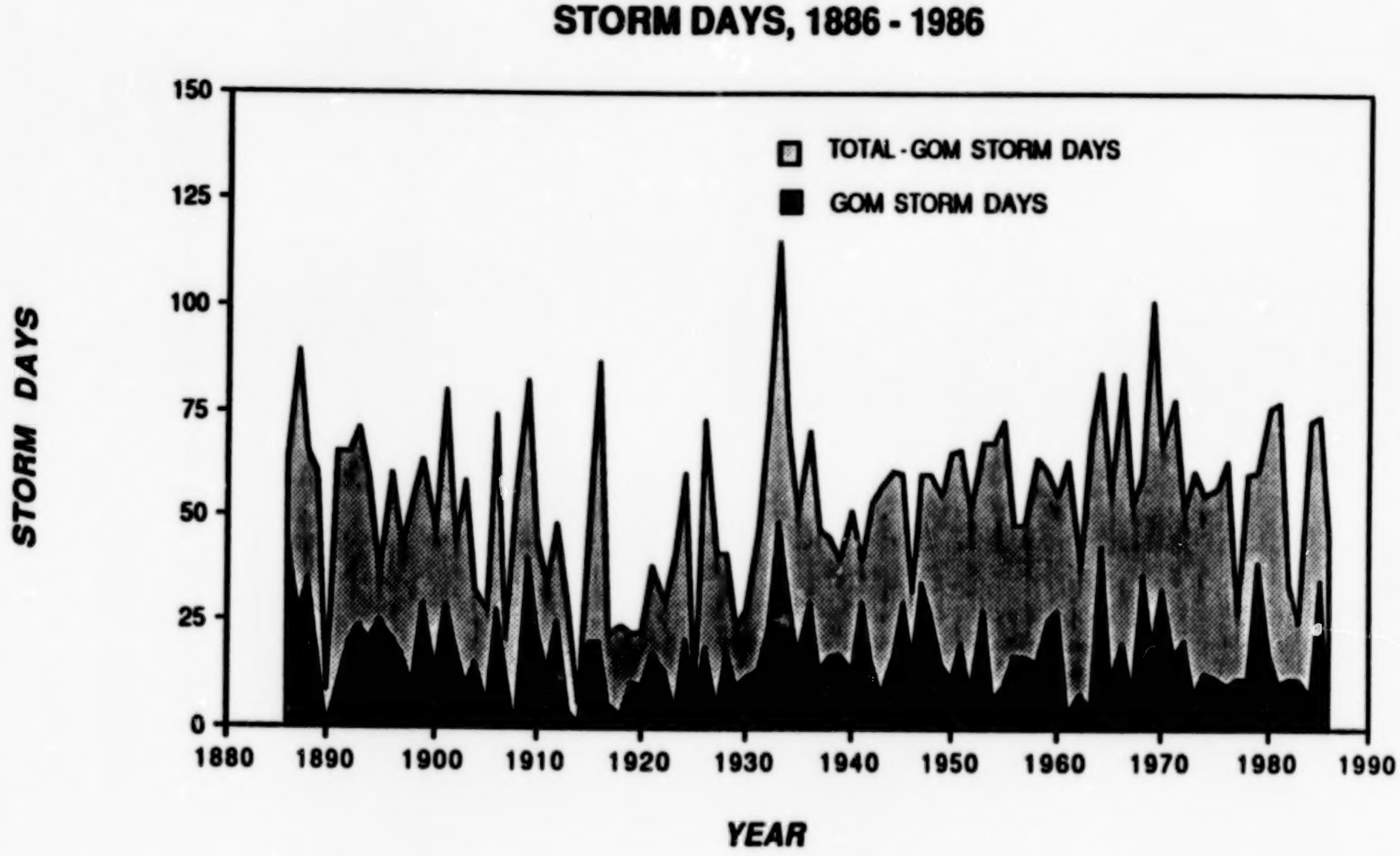

Figure 2.7.2-6 Distribution of the total number of storm days within the North Atlantic Basin versus the number of storm days inside the Gulf of Mexico window (20°N, 100°W; 30°N, 80°W) for the period 1886-1986.

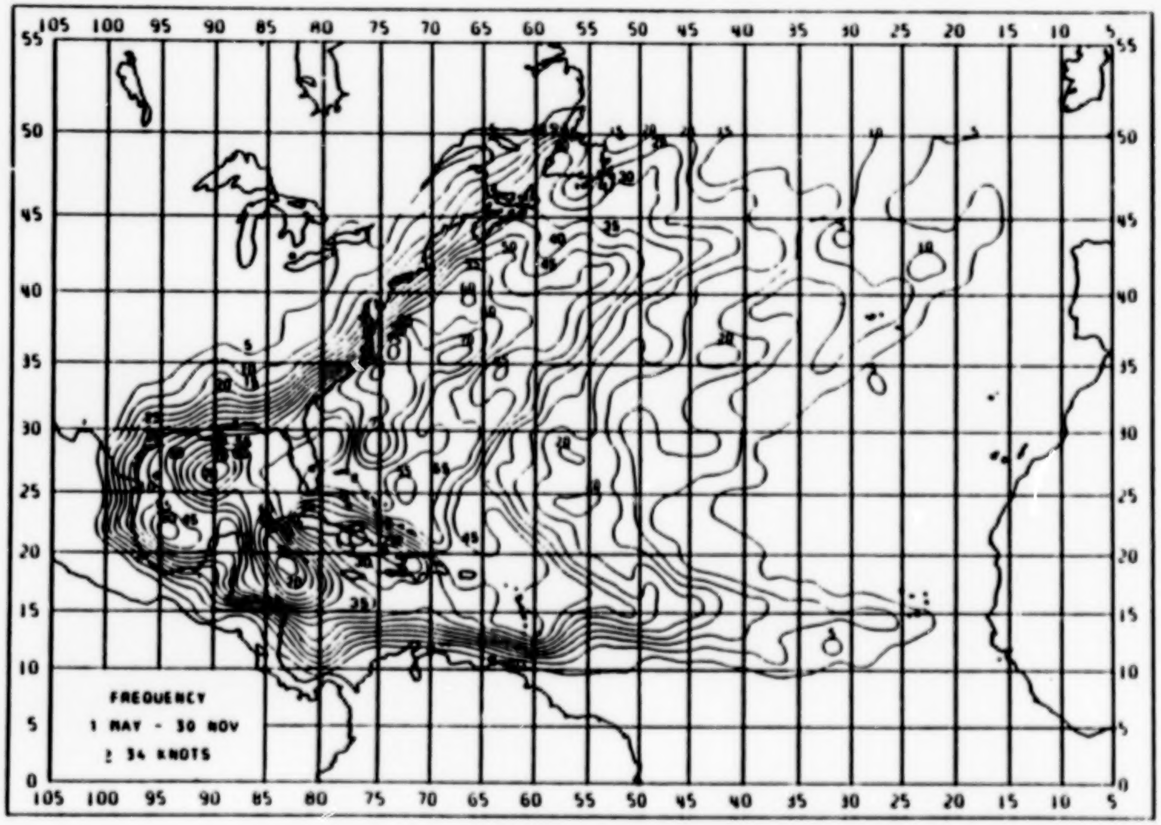

Figure 2.7.2-7 The frequency of storms (1 May - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 34 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

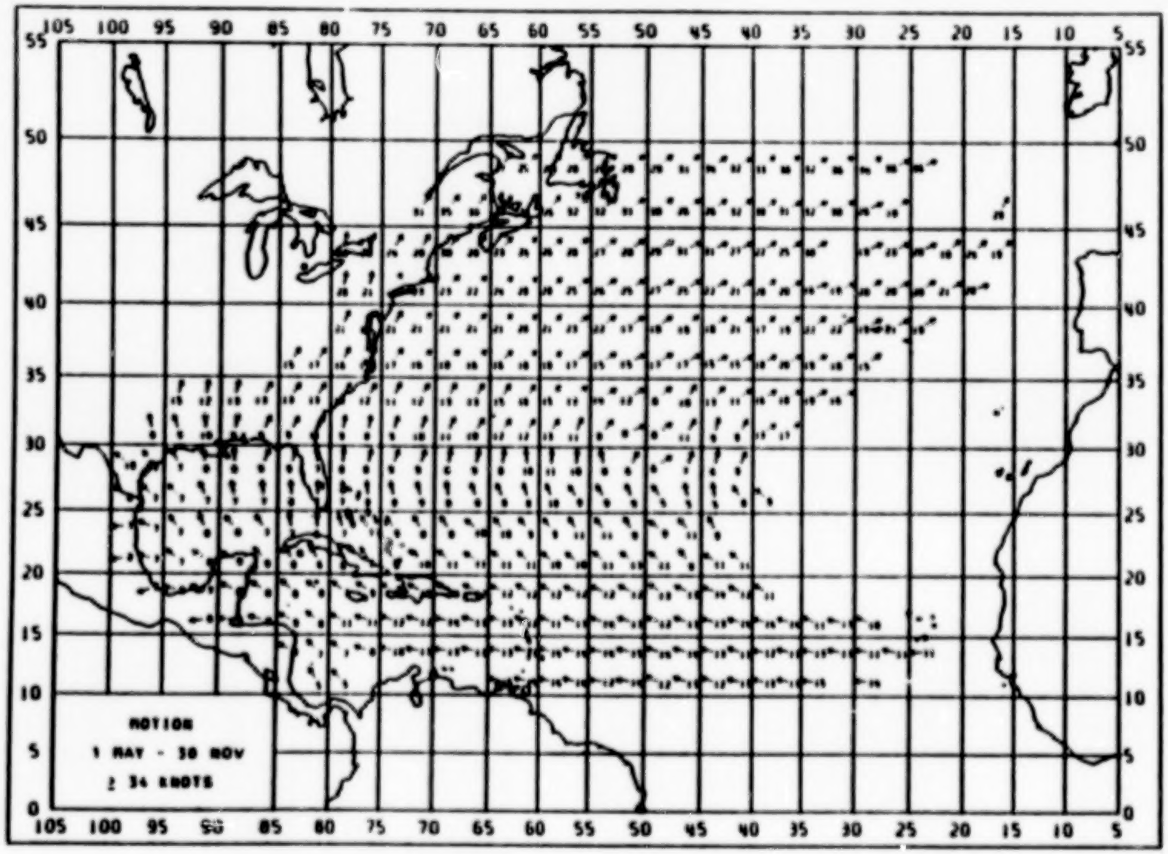

Figure 2.7.2-8 The direction of motion and vector speeds of storms (1 May - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 34 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

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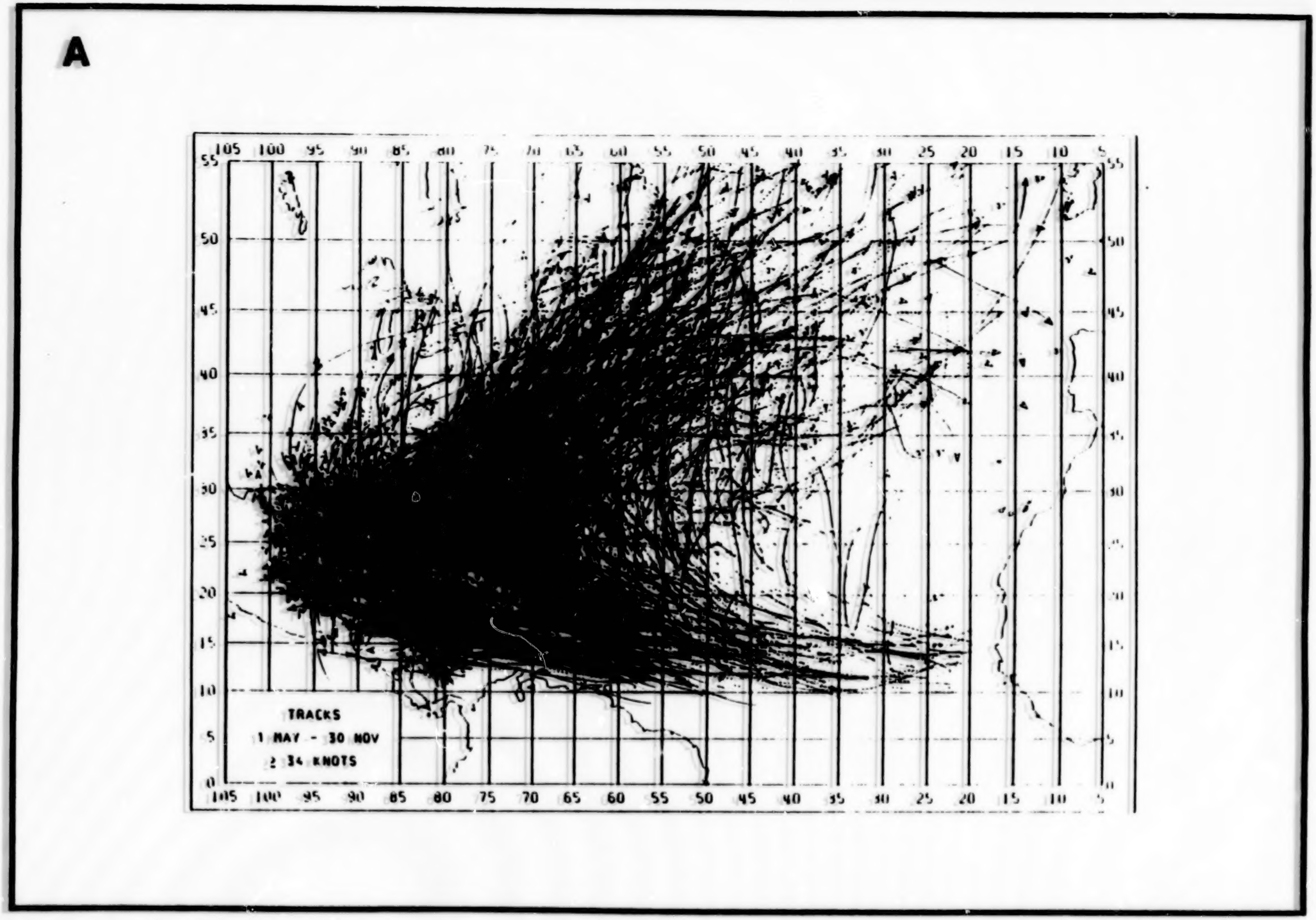
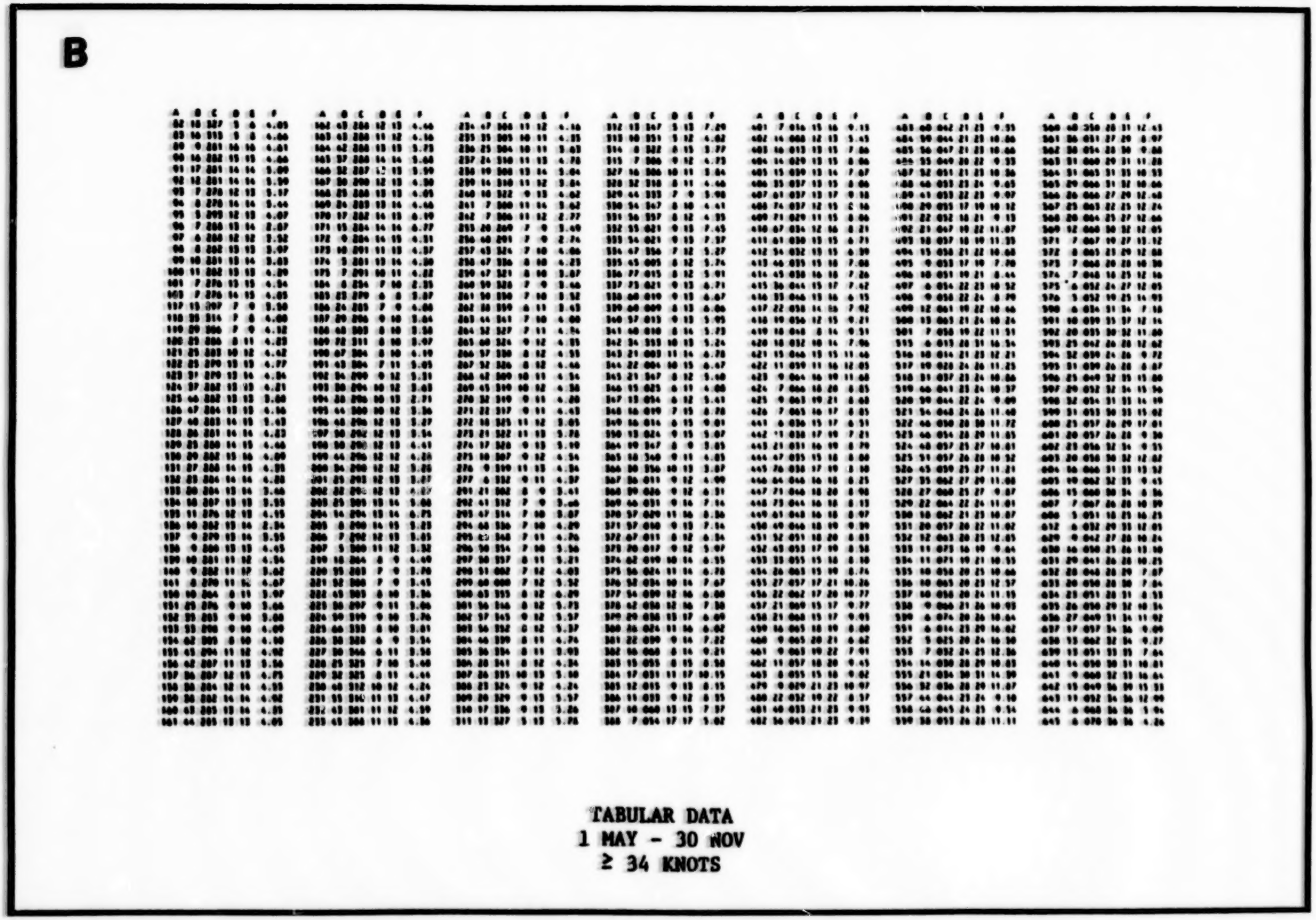


Figure 2.7.2-9a Storms tracks utilized in computations for Figures 2.7.2-7 and 2.7.2-8 (from Neumann and Pryslak, 1981).



TABULAR DATA
1 MAY - 30 NOV
≥ 34 KNOTS

Figure 2.7.2-9b Statistics associated with Figures 2.7.2-7 and 2.7.2-8. See text for a detailed explanation (from Neumann and Pryslak, 1981).

B, expected number of cyclones passing with 139 km of given box center per 100 years; column C, resultant vector direction in degrees toward which the storm is expected to move on the average; column D, resultant vector speed in knots; column E, average translation speed without regard to direction (in knots) and column F, standard deviation (knots) of column E data (Neumann and Pryslak. 1981).

The basin summary tropical storm charts (> 34 knots) show frequency maxima in the southeastern and central Gulf regions. The Yucatan Straits appear to be the most likely entry point into the Gulf of Mexico, as opposed to the Florida Straits. This may be, in part, due to storms earlier in the hurricane season entering the Gulf from the former position, while storms occurring later in the season which track toward the Florida Straits often times recurve northward and never enter the Gulf region. Finally, translation speeds in the Gulf of Mexico are lower than those in the region surrounding the basin, implying slightly longer residence times for systems that enter the Gulf. Figures 2.7.2-10 through 2.7.2-12a-b summarize the same parameters, except where the maximum 1-minute sustained winds are > 64 knots (hurricane intensity). As expected, the number of potential cases is greatly reduced over the previous set of diagrams. The central Gulf maximum still exist; however, the Yucatan Straits and Florida Straits now show approximately equal storm frequencies. When analyzing the data where maximum sustained 1-minute winds are ≥ 100 knots (Figures 2.7.2-13 through 2.7.2-15a-b), the frequency maximum in the central Gulf remains. However, the maximum over the Yucatan Straits has diminished, while the region around the Florida Straits and Southern Florida has become the highest frequency area on the map. In addition, average storm speeds are faster for this latter storm classification in the Gulf of Mexico than for the former 2 types.

The data set of Neumann and Pryslak (1981) for the November transitional period shows that tropical cyclones (maximum sustained 1-minute winds > 34 knots) have very little influence on the Gulf of Mexico during this month. The maximum frequency (Figure 2.7.2-16 through 2.7.2-18a-b) of 3 storms per 100 years is located in the far southeastern corner of the Gulf of Mexico. There are no storm motion vectors (Figure 2.7.2-17) since fewer than 5 storms in the 80-year record met both the temporal and wind speed criteria. Figure 2.7.2-18b shows the relative sparsity of storm tracks in this region for the November transitional period. Obviously, no tropical cyclone activity is documented for the April transitional period since it occurs two months prior to the beginning of the hurricane season.

2.7.3 Frontal Passages

DiMego et al. (1976) presented a general description of frontal intrusions into the Gulf of Mexico-Caribbean Sea region. Granted, frontal intrusions into this area are not as common as regions located north of 35°N. However, no real description of these meteorological phenomena existed, with the exception of a study for Mexico (Hill, 1969) and a general estimate by Trewartha (1966) prior to this work by DiMego et al. (1976). The data base utilized consisted of six-hourly Northern Hemisphere Surface Charts for the period 1965-1972. These charts (at 00, 06, 12, and 18 GMT) were used to compile both frequency and duration statistics for each 2½° latitude/longitude grid cell within the region. The data set does not differentiate between frontal type (e.g., warm, cold, stationary or occluded), and thus, represents a summary of all frontal activity in the Gulf

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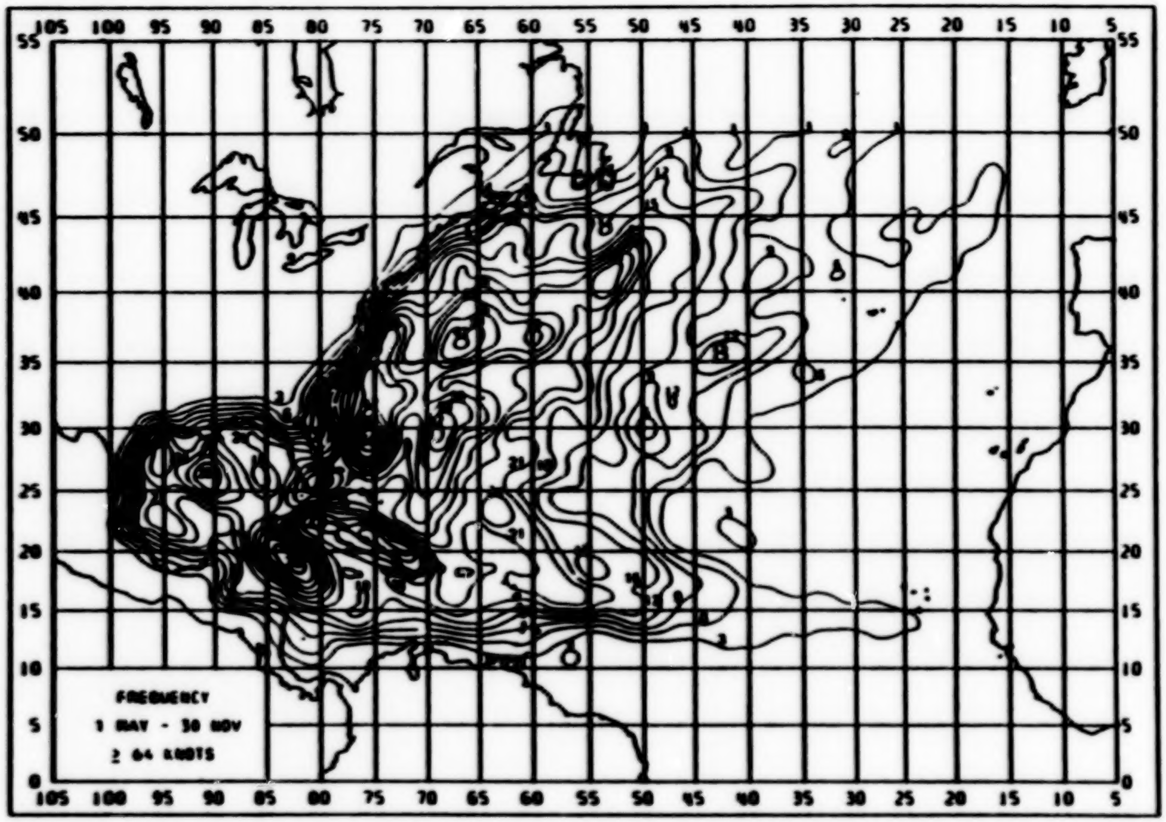

Figure 2.7.2-10 The frequency of storms (1 May - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 64 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

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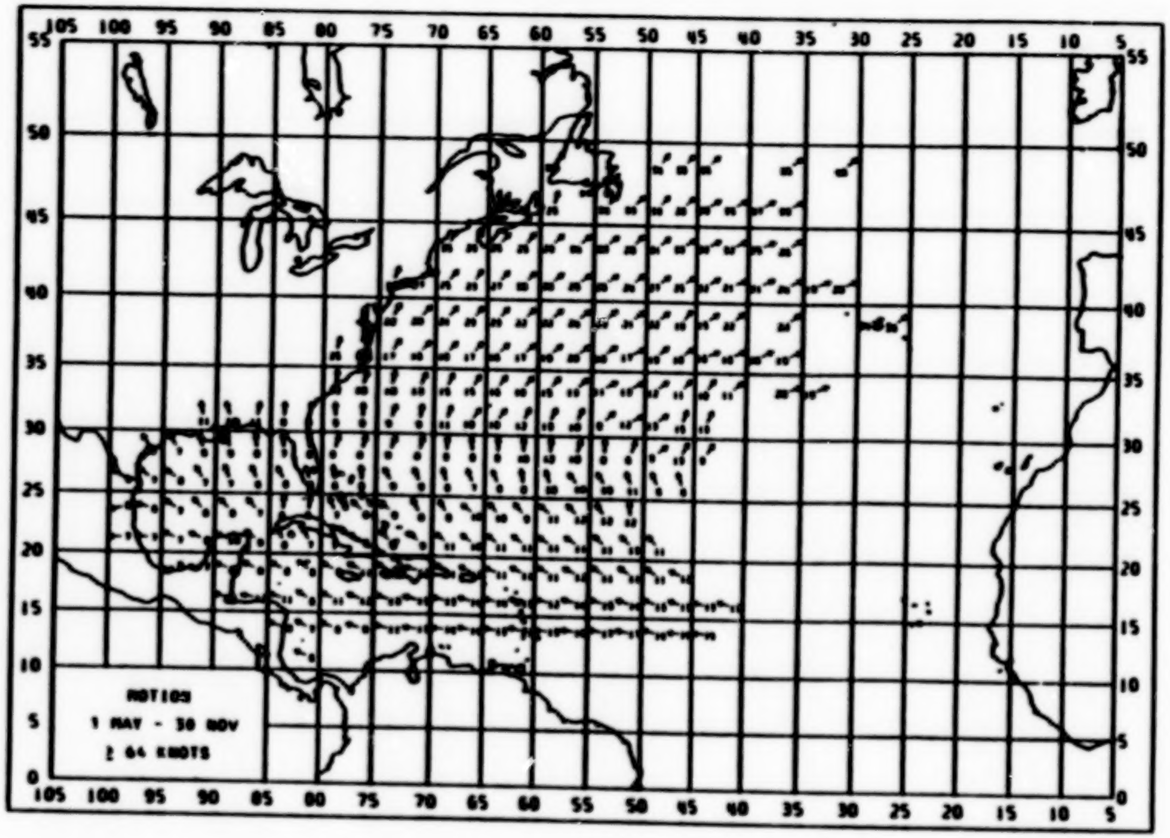

Figure 2.7.2-11 The direction of motion and vector speeds of storms (1 May - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 64 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

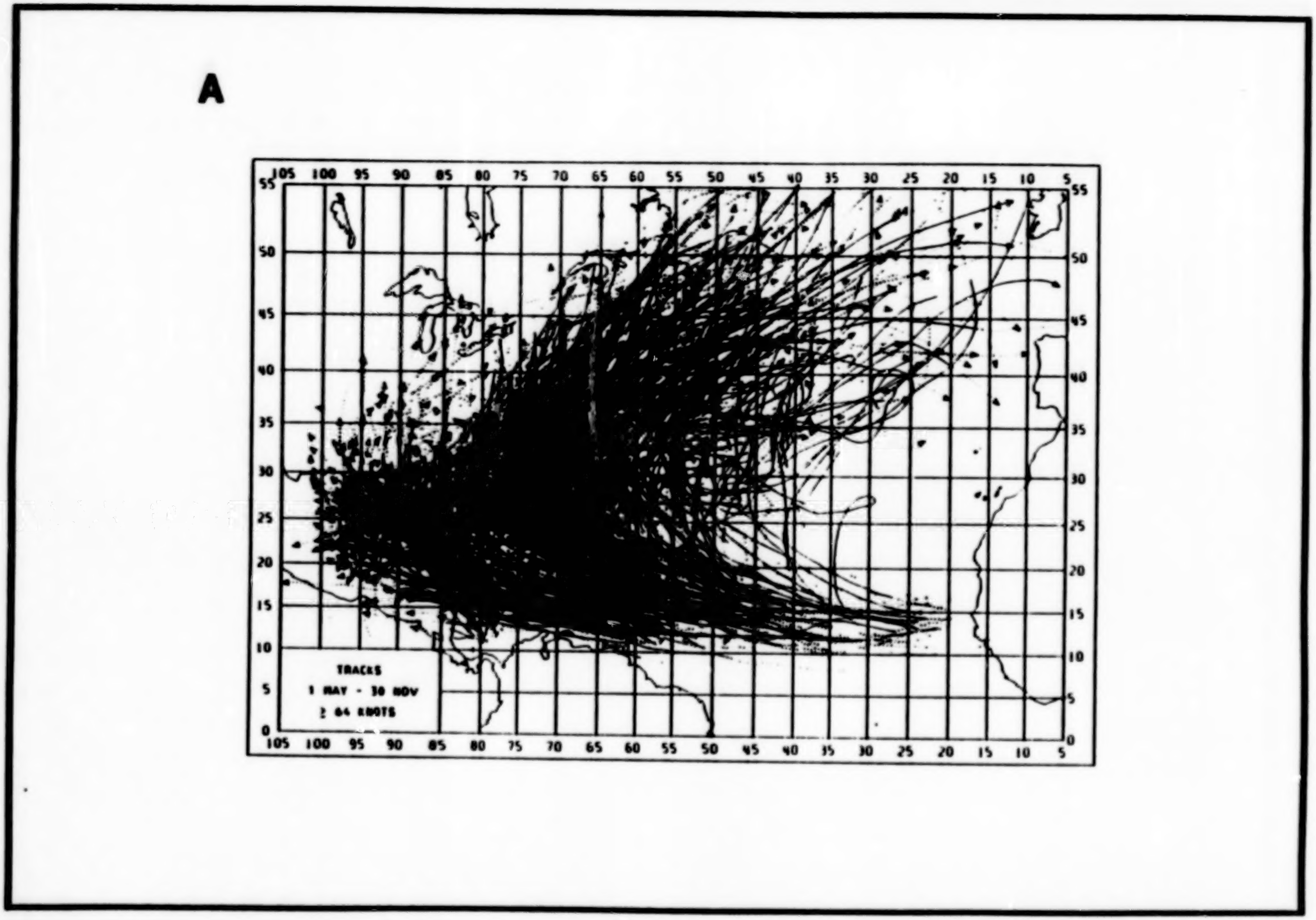

Figure 2.7.2-12a Storms tracks utilized in computations for Figures 2.7.2-10 and 2.7.2-11 (from Neumann and Prysiak, 1981).

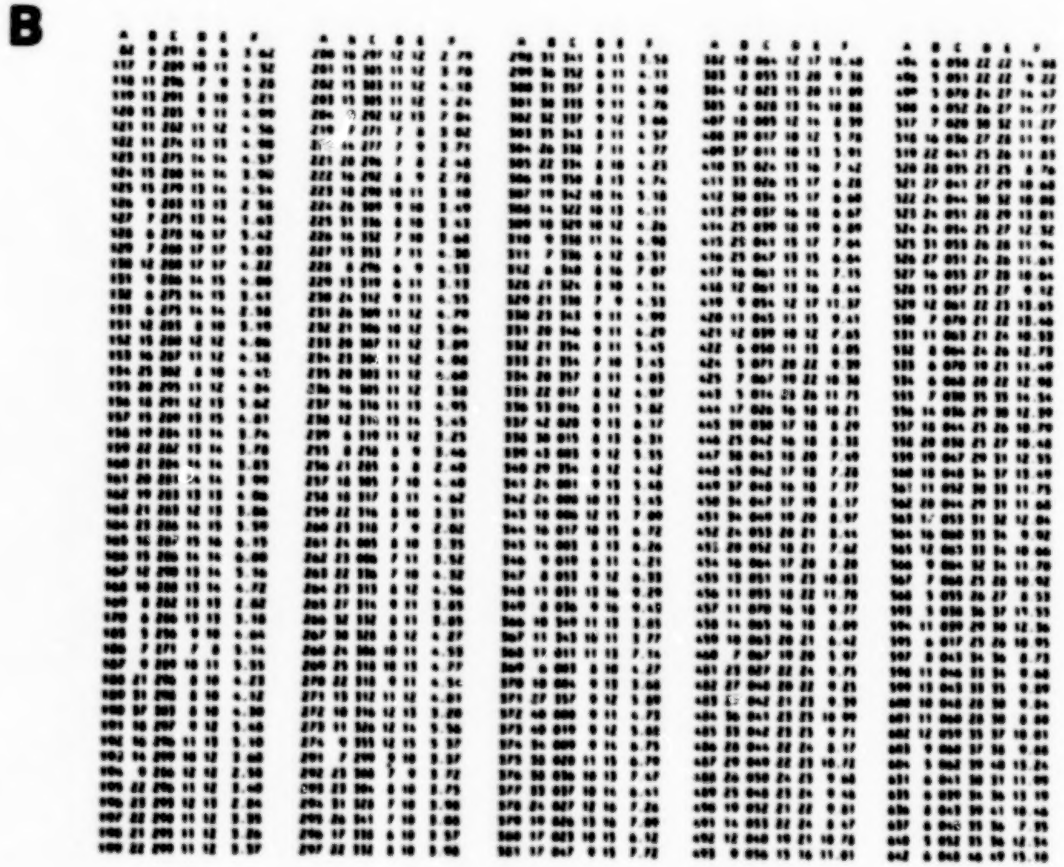

Figure 2.7.2-12b Statistics associated with Figures 2.7.2-10 and 2.7.2-11. See text for a detailed explanation (from Neumann and Pryslak, 1981).

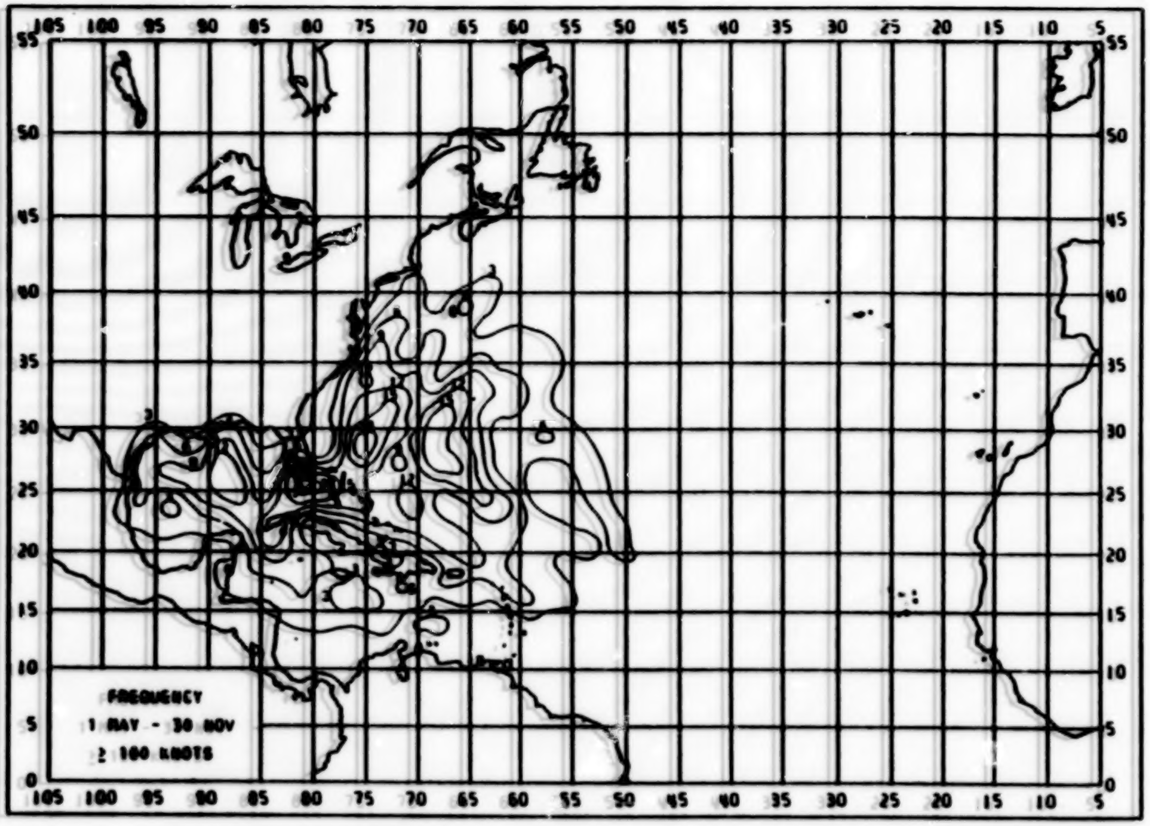

Figure 2.7.2-13 The frequency of storms (1 May - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 100 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

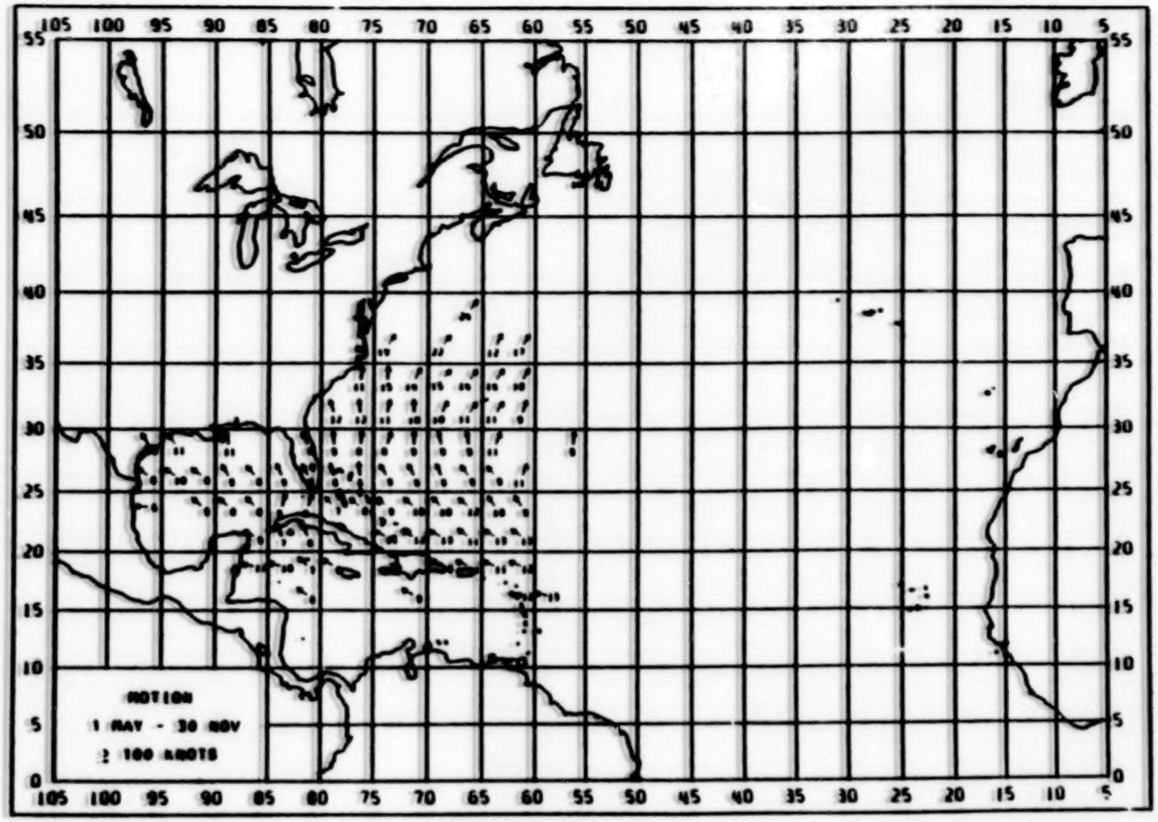

Figure 2.7.2-14 The direction of motion and vector speeds of storms (1 May - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 100 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

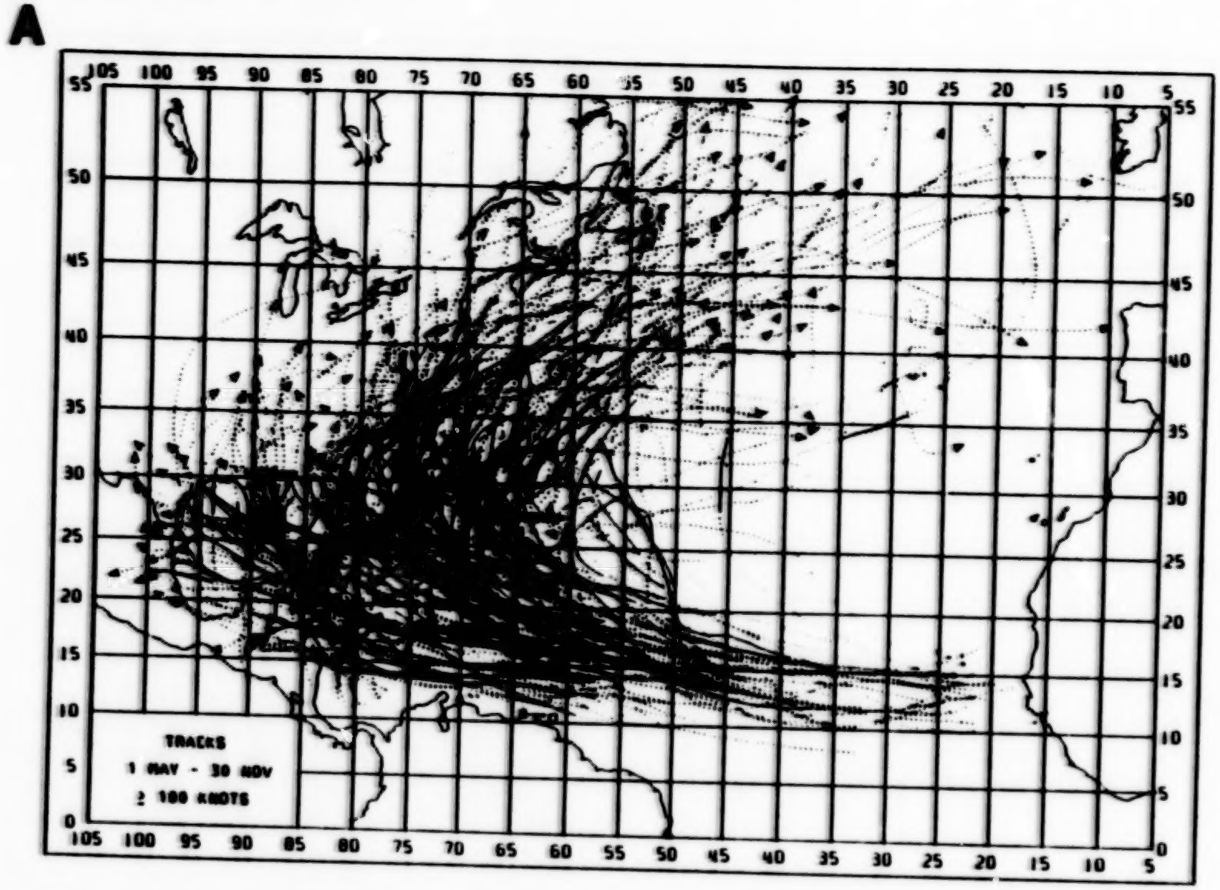

Figure 2.7.2-15a Storms tracks utilized in computations for Figures 2.7.2-13 and 2.7.2-14 (from Neumann and Pryslak, 1981).

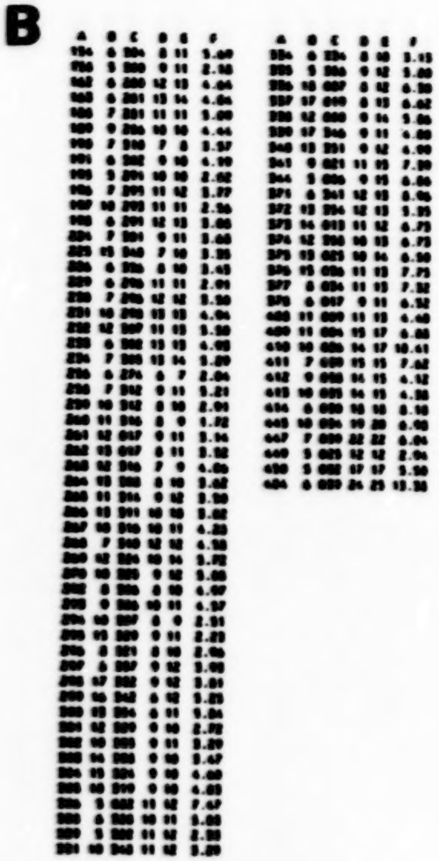

Figure 2.7.2-15b Statistics associated with Figures 2.7.2-13 and 2.7.2-14. See text for a detailed explanation (from Neumann and Pryslak, 1981).

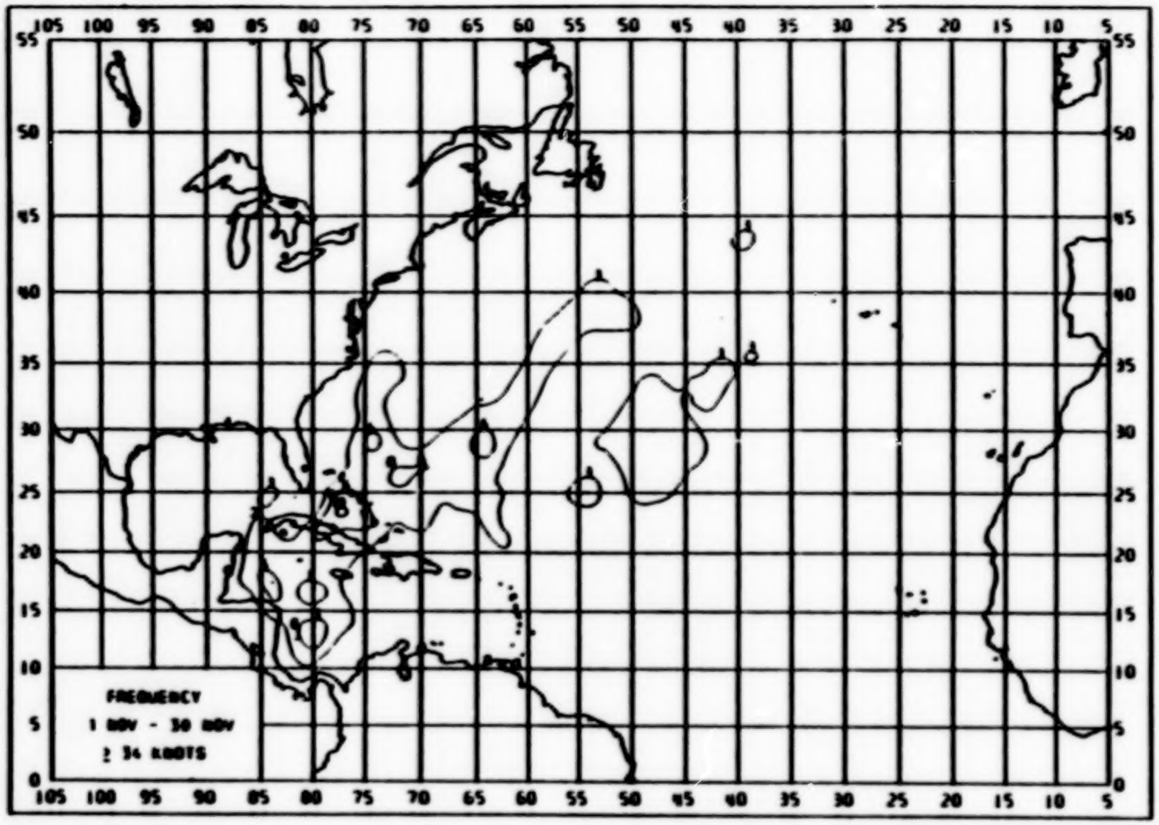

Figure 2.7.2-16 The frequency of storms (1 Nov - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 34 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

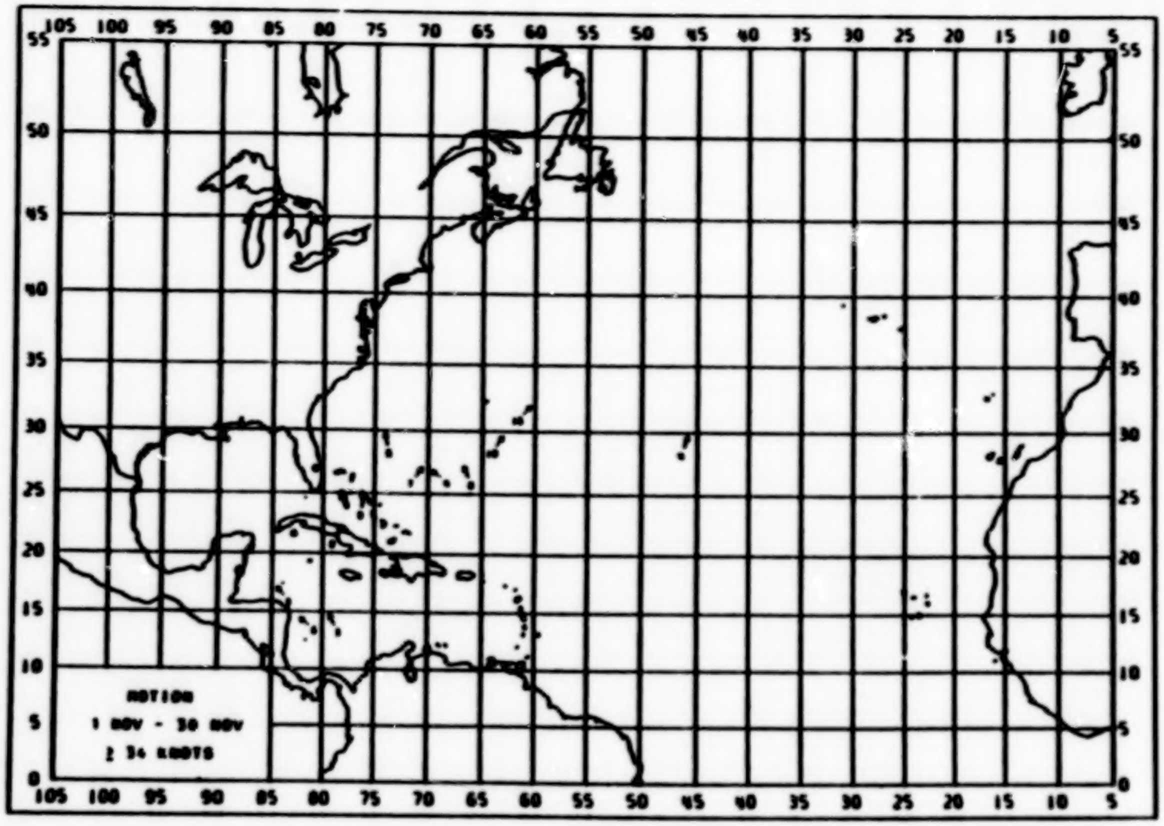

Figure 2.7.2-17 The direction of motion and vector speeds of storms (1 Nov - 30 Nov) passing within 139 km per 100 years for storms with 1-minute maximum sustained winds ≥ 34 knots, averaged over 2½° latitude/longitude grid cells (from Neumann and Pryslak, 1981).

A

A	B	C	D	E	F
118	6	307	6	6	3.83
119	6	332	3	6	2.05
153	6	319	9	11	3.94
227	6	030	8	14	3.11
264	9	011	9	14	5.32
302	6	036	7	14	5.42
303	6	307	4	14	4.46
304	6	337	8	14	4.63
337	6	347	6	14	5.73
341	6	033	10	13	6.65
348	5	018	4	19	11.70
378	5	043	16	17	5.49

B

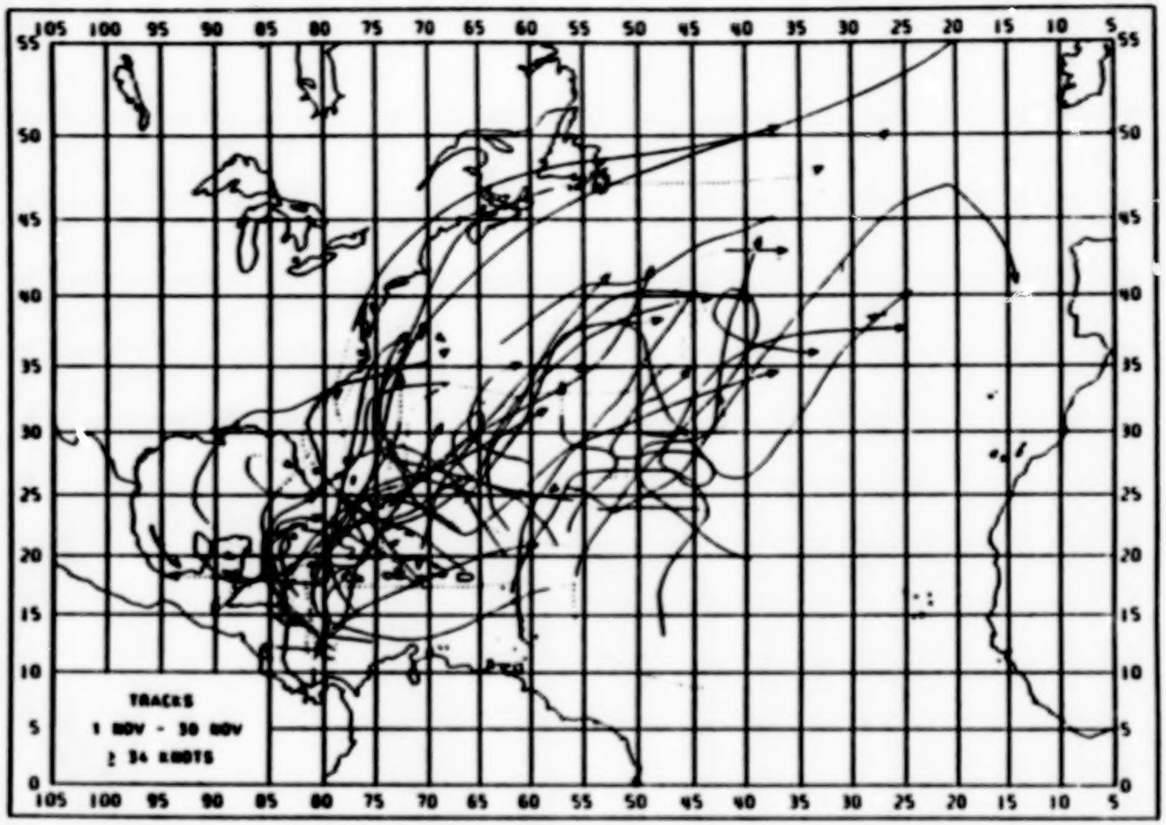

Figure 2.7.2-18a-b (a) Statistics associated with and (b) Storm tracks utilized in computations for Figures 2.7.2-16 and 2.7.2-17. See text for a detailed explanation (from Neumann and Pryslak, 1981).

of Mexico region. The reader is referred to the original manuscript (DiMego et al., 1976) for the mechanics and details of the data collection.

The winter frontal frequency for the Gulf of Mexico is characterized by almost identical patterns for each of the 4 months. The maximum frontal activity experienced during this season is easily explained by the region of maximum westerlies (i.e., the polar jet stream) acting as the dividing barrier between cold, dry continental polar air and warmer, moist maritime tropical air, which is at its southernmost reach during this time period. This scenario is best illustrated by a cold air outbreak in this region, where the frontal zone acts as a sharp baroclinic zone separating the highly baroclinic mid-latitude air mass from the more barotropic tropical air (DiMego et al., 1976). These type intrusions into the Gulf region have been detailed by Fernandez-Partegas and Mooers (1975).

During the months of December-March, the region of frontal influence extends down to approximately 10°N, well out of the desired study area. The December frequency pattern is essentially zonal in the Gulf, with the maximum located just west of the Louisiana delta. January shows a trough in the frequency pattern developing in the western Gulf, with a general zonality experienced elsewhere. Maximum frequency is experienced in February, when 9 frontal passages per month can be expected above approximately 28°N. The western trough deepens and a ridge begins to develop along the west Florida shelf in the frequency contours of DiMego et al. (1976). March represents the breakdown in the western Gulf trough and the development of a southeastward trend in all frequency contours. During March the northern half of the Gulf of Mexico is influenced by approximately 7 frontal passages per month. The frequency maximum (eight fronts per month) at this time is located in the northeastern Gulf of Mexico.

Maximum frontal duration for the winter season is shown to be during December and January by DiMego et al. (1976). The duration maximum tends to shift from the western Gulf in December across the central Gulf over to the Florida Straits by March. Their analysis showed a maximum frontal duration of approximately 30-36 hours for the majority of the Gulf region for December-January, decreasing to 24-30 hours for the western and northern Gulf during February. March details a general increase to 30 hours for the central Gulf, while the Texas and Florida coastal regions remain in the 24-hour duration range. The general minimum in duration experienced along Gulf coastal regions has been attributed to the enhancement of frontal movement along the Gulf coast (DiMego et al., 1976).

Following the winter frontal passage analysis, the summer (May-October) frontal frequencies and durations were analyzed using once again, the data presented by DiMego et al. (1976). May shows a general zonal frequency pattern; however, the magnitudes have decreased by a factor of 2 (March maximum frequency = 8, April maximum frequency = 4). During this time period, the entire Gulf region experiences a minimum of at least 1 frontal passage per month. Also, the level of southernmost frontal influence has retreated northward to approximately 15°N. The months of June-August are characterized by almost no frontal activity south of 20°N, while penetrations below 25°N are rare. The maximum (2-3 fronts per month) frequency during these months is found in the northeastern Gulf of Mexico. September shows the general southerly migration of the frontal activity line, caused by the increasing influence of the Bermuda or sub-tropical anticyclone. The period of September-October shows the general transition from summer into winter as the frequency over the entire study area nearly doubles. This shift is concomitant with increase in the strength of the mid-latitude westerlies (polar jet stream) (DiMego et al., 1976).

Fronts during the inactive summer period are generally longer than those experienced during the winter regime. The region of greatest duration appears to be in the western Gulf of Mexico, as was found for the cooler, winter months. This shows the lack of topographic influence for fronts penetrating south of 30°N. Generally, the oscillations experienced in duration are controlled by terrain, strength of the jet stream in any given month and the ability of the warmer tropical waters to modify the overlying air mass such that it slows its equatorward motion (DiMego et al., 1976).

As discussed previously, the actual increase (or transition) in frontal frequency occurs in October; however, during November, the strong zonal frequency pattern begins to entrench itself throughout the Gulf of Mexico. In contrast, April does mark the onset of the northerly excursion of the frequency contours throughout the Gulf. In terms of duration, April and November are true transition months for the Gulf of Mexico. April begins the transition of long frontal duration in the southeast corner of their study area, while November is the onset of the typical winter frontal duration pattern. In general, the inclusion of these months, April and November, into the summer and winter climatologies, respectively, would have been possible in terms of the frontal analyses presented by DiMego et al. (1976).

III. SUMMARY

3.1 Summary

This meteorological summary consists of a compilation of data from a number of sources and a statistical description by month, season and year of the dominant wind, pressure, air temperature, sea surface temperature (SST), storm tracks, and frontal occurrence patterns in the Gulf of Mexico. The primary sources of data are meteorological time series from NWS coastal stations, NDBC buoys, NDBC CMAN stations, OCMP data from Shell Oil Company, SST maps compiled from ship observations, storm tracks compiled by the National Hurricane Data Center, the University of Virginia Extratropical Cyclone data and the frontal occurrences analyzed by DiMego et al. (1976). The period of the statistical analysis of the time series overlaps the 10-year ocean circulation model calculations for the Gulf of Mexico, which use Limited Fine Mesh (LFM) model derived winds as forcing (Rhodes et al., 1985). The NWS coastal station data covers the period 1970-1986, the NDBC buoy data covers 1976-1986 and the NDBC CMAN data set includes 1985-1987, depending on the location. The OCMP platform station spans the period 1972-1976, but is very intermittent in nature. Storm track data have been analyzed over the 100-year historical record, 1886-1986, and the ship based-SST data is analyzed by 1° quadrangles for the period 1854-1973.

Hopefully, the analyses included in this report will provide useful information on the variability of meteorological conditions in the Gulf of Mexico. The data have been analyzed by winter and summer season, December through March and May through October, respectively, and by multi-year monthly statistics (means and variances). Sensible heat flux has been calculated for the NDBC buoys and CMAN stations, while wind stress was calculated for all (NWS coastal stations, NDBC buoy and CMAN stations and the OCMP platform) the wind records.

Primary results emphasize the difference between winter and summer means and the significant variability; particularly over the central and northwestern Gulf. Winter is characterized by high variability associated with the occurrence of storms and cold air outbreaks over the northern Gulf, along with cyclogenesis, and the movement of cold fronts down from the north. In summer, the variability is much weaker, except for the occasional occurrence of a tropical storm or hurricane. Frontal activity is weak and the fronts are generally warm and move slowly up from the south. Winds are weak off west Florida; however, Key West, Alligator Reef, the central and western Gulf and the Texas coast show a moderate to strong southeasterly flow, which persists most of the summer. This summer wind system is partly the result of the well-defined stationary Bermuda High and the Rockies Low and the SE trade winds funneling warm, moist air northwestwards across the Gulf.

Transition between the 2 seasons occur within a few weeks over most of the Gulf, and therefore, a distinct spring and fall is not apparent at these latitudes. The separately analyzed transition months of April and November can show characteristics of either season, depending on the regions and years considered.

Monthly SST maps show strong north-south gradients across the northern shelf areas in winter, along with contrasts between the Loop Current and the western Gulf basin. By middle and late summer, SST's are a fairly uniform 29°C throughout the Gulf, and no major features are discernable. Similarly, sensible heat flux is larger in winter and smaller from May through October. The largest heat fluxes occur during strong cold outbreaks, which reach the warm deep water of the western Gulf.

Thus, this report summarizes a compilation of meteorological data for the Gulf of Mexico, which shows how varying atmospheric conditions can affect oceanographic processes in the region. Furthermore, this report identifies a data set which is currently stored in one location and is readily available to the Gulf of Mexico scientific community for inclusion in any future research.

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APPENDIX A

SUMMARY DATA CATALOG

DATA CATALOG

The data sets collected and used in this study represents the composite data from a number of studies and observational activities conducted in the Gulf over a number of years. All data were evencually reduced to 1600 BPI on 9 tract tape using ASCII, UNLABELED, BLOCKED format and are archived as such at FAMU. Other user-specified formats may be requested. The data include buoy, ship, and platform data. The data sets collected are:

Set #1	**NDBC BUOY DATA SET**
DESCRIPTION:	National Data Buoy Center (NDBC) data for the Gulf of Mexico in standard National Oceanographic Data Center (NODC) format for the period 1973-1983. Wind speed and direction, air and sea surface temperature, and in some cases significant wave height and period was recorded.
Set #2	**NCDC SHIP DATA**
DESCRIPTION:	National Climatic Data Center (NCDC) ship data for Marsden Squares 81 and 82 (Gulf of Mexico) in TD-1129 format for the period January 1970-Dececber 1983.
Set #3	**NWS COASTAL WIND STATION DATA**
DESCRIPTION:	National Weather Service (NWS) Coastal Wind Station Surface Airways Observations for 9 stations around the Gulf of Mexico the the period 1970-1987. Data obtained from NCDC. The following stations are included:

1. Key West, FL
2. Fort Myers, FL
3. Tampa, FL
4. Pensacola, FL
5. Boothville, LA
6. Mobile, AL
7. Port Arthur, TX
8. Corpus Christi, TX
9. Brownsville, TX

Set #4	**Tropical Cyclone Data for the North Atlantic Basin (HURDAT)**
DESCRIPTION	NCDC cyclone track data for the Gulf of Mexico for the period 1886-present.
Set #5	**Extratropical Cyclone Track Data**
DESCRIPTION	Extratropical cyclone track data for the Gulf of Mexico provided by the University of Virginia, Department of Environmental Sciences for the period 1886-1986.

Set #6 **OCMP Station Data**

DESCRIPTION Ocean Current Meausrement Program (OCMP) digitized meteorological data from the analog observation records of station 2 of the OCMP study conducted from September 1972 - November 1977.

APPENDIX B

LIST OF CONTACTS/SOURCES

The sources used to conduct this project are as indicated:

NAME	INFORMATION
Mr. Harold Kilpatric Department of Meteorology Love Building Florida State University (FSU) Tallahassee, FL 32306 (904) 644-6205	General Meteorology Information
Dr. Jordan FSU Meteorology Library (904) 644-3222	Reference Books
Dr. Shu Department of Marine Science Louisiana State University (504) 388-2395/2396	Oil Co. Wind Data
Mr. Dana Thompson National Ocean Research & Development Activity (NORDA) (Code 324) NSTL, MS 39529	Gulf Buoy Data
Mr. Ben Davis National Climatic Data Center Federal Building Asheville, NC 28801-2696 (904) 259-0682	General Wx Data MARSDEN SQUARE Data
Mr. Bob Lobel Acting Chief Branch of Environmental Modeling MS 644 12201 Sunrise Valley Drive Reston, VA 22091 (703) 860-6730	Reference Literature
Pennsylvania State University Department of Meteorology University Park, PA 16802	Reference Material
Mr. Mike McDermit U.S. Naval Postgraduate School Department of Meteorology Monterey, CA 93940 (408) 646-2516	Reference Material

Ms. Pat Kirk National Oceanographic Data Center NOAA/NESDIS E/OC21 2001 Wisconsin Avenue, NW Washington, DC 20235 (202) 634-7500	NODC Data Base
Mr. Bob Stein NODC/D 742 2001 Wisconsin Avenue, NW Washington, DC 20235 (202) 634-7505	Oil Company Data (CONOCO)
Francis Mitchell NOAA/NODC E/OC 13 2001 Wisconsin Avenue, NW Washington, DC 20235 (202) 634-7500	
Mr. Al Bargeski NODC Washington, D.C.	Gulf Oil Rig Data
Mr. Fred Kramer National Weather Service Tallahassee, FL (904) 576-6318	Local Wx Service (Tallahassee)
John W. Wolfe, Jr., PE Director-Environmental Affairs North American Production CONOCO 600 N. Dairy Ashford Road P. O. Box 2197 Houston, TX 77252 (713) 293-2646	Meteorologist
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Ken Schaudt Oceanographer Marathon Oil Co. P. O. Box 3128 Houston, TX 77253 (713) 629-6600	Oceanographer

John Heideman EXXON Production Research Houston, TX (713) 940-3711	Chief Meteorologist
Thomas Mitchell SAIC Office Alpha 13140 Coit Road Suites 207 and 219 Dallas, TX 75240	Senior Scientist
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Tony Fallon CHEVRON Oil Co. Los Angeles, CA (213) 694-7787	Chief Meteorologist
Mike Spalane GULF Oil Col (713) 754-0321	Chief Meteorologist
George Z. Forristall SHELL Development Co. Houston, TX 77001 (713) 663-2404	Chief Meteorologist
Bob Hamilton Evans/Hamilton 7214 S. Kirkwood Houston, TX 77072 (713) 495-0883	Digitize Data Sets has ODGP Meteo Data
Elgin Landry Minerals Management Service New Orleans, LA 70123 (504) 736-2866	MMS Meteorologist
Dr. (Capt.) Glen Hamilton National Data Buoy Center NSTL, MS 39529 (601) 688-2836	C-MAN data set

APPENDIX C

MONTHLY AND ANNUAL STATISTICAL TABLES FOR ATMOSPHERIC PRESSURE, AIR TEMPERATURE, SEA SURFACE TEMPERATURE, AIR - SST AND SENSIBLE HEAT FLUX

ORGANIZATION OF THE MONTHLY AND ANNUAL STATISTICAL TABLES:

- Each month is listed across the top of each page, including a column for annual totals.

- Each year is listed down the left-hand side of each page. Each year has the following computed statistics:

    - mean value for each column,
    - variance for each column,
    - number of points used in the calculations for that particular column,
    - number of possible points within each column.

- A summary of all years is presented at the end of each series, showing the long-term values for each parameter described above.

C.1 NATIONAL WEATHER SERVICE (NWS) COASTAL STATIONS

C.1.1 ATMOSPHERIC PRESSURE (mb - 1000.0)

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          KEY WEST          VARIABLE : PRESSURE  MB-1000     DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 4
          MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

 1970    18.358   20.211   16.153   16.801   16.775   16.752   17.210   15.442   15.040   14.018   17.783   18.994   16.938
          23.87    18.18    19.38     8.24     3.47     2.45     2.27     1.92     3.95     4.11     8.99     6.79    11.25
            738      672      744      720      744      720      744      744      720      744      720      744     8754
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1971    18.865   18.133   17.572   17.103   15.376   17.173   17.348   15.590   14.165   13.885   16.086   18.737   16.663
          13.39    14.69     7.93    20.13     3.73     3.05     1.06     3.50     2.44     3.02     5.67     3.75     9.30
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1972    18.518   18.174   16.448   17.113   13.379   13.587   18.003   16.669   15.478   15.281   15.479   18.517   16.308
           7.07    22.97    19.83     5.67     7.59    10.81     2.17     3.64     3.61     9.11     4.40    16.59    12.35
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

 1973    18.263   19.025   16.222   16.180   16.043   15.958   16.247   15.728   14.813   13.413   18.365   19.036   16.591
          14.05    10.60     7.99    18.64     5.33     3.47     2.55     3.95     2.79     5.80     5.12     9.10    10.15
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1974    20.407   18.459   18.048   18.645   15.225   14.779   17.529   16.940   14.020   17.032   17.192   18.882   17.265
           3.51    15.19     7.74     4.94     6.15     5.70     3.22     2.03     3.05    11.00     4.85     9.21     9.45
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1975    19.649   18.072   17.001   17.295   14.759   16.542   16.889   17.379   14.759   15.720   17.870   19.505   17.118
           6.66     5.72     5.37     4.81     2.18     2.76     1.18     2.04     4.50     3.30     8.05     7.85     6.86
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1976    20.475   20.678   18.552   17.018   15.788   15.667   18.383   15.735   15.248   14.361   17.177   17.319   17.191
           8.08    11.51     4.18    16.09     7.03     3.51     1.62     6.83     3.66     5.25     7.59    10.02    10.76
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

 1977    18.126   19.197   17.335   18.331   14.790   16.879   17.969   16.538   15.186   15.458   16.377   17.785   16.983
          13.12     8.94     4.95    10.97     8.93     6.15     1.58     2.25     3.37     3.55    10.92    14.57     9.12
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1978    19.766   17.649   17.658   16.006   14.360   16.519   17.029   16.817   14.613   13.987   17.012   17.995   16.615
          18.28    12.82    16.22    12.90     6.97     1.28     2.66     1.69     2.01     2.90     2.99     8.75    10.02
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760
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            KEY WEST          VARIABLE : PRESSURE  MB-1000      DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 4
            MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

              JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

   1979    18.090   19.699   18.085   16.232   15.055   15.828   17.300   16.396   11.669   13.857   16.303   19.174   16.531
            32.67     7.37    15.02     7.90     2.00     8.02     2.85     4.35     8.86     2.36    10.90     7.39    14.03
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1980    18.062   18.640   17.133   15.303   14.174   16.908   16.650   15.857   15.282   14.945   16.501   18.097   16.530
             7.35    12.24    11.39     5.08     4.26     2.52     1.46     3.10     2.62     5.21     9.84     7.87     8.08
              744      696      744      720      744      720      744      744      720      744      720      744     8784
              744      696      744      720      744      720      744      744      720      744      720      744     8784

   1981    19.433   19.490   16.124   19.067   12.552   15.877   17.089   15.075   14.747   15.451   16.224   18.070   16.770
            10.37    13.43    19.23     9.29     5.72     1.84     2.36     9.39     3.07     3.52     5.42     7.03    11.08
              744      672      744      720      343      720      744      744      720      744      720      744     8359
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1982    19.447   18.563   16.922   16.193   15.139   15.151   17.643   17.234   14.453   15.297   17.432   19.073   16.877
             8.68     7.24     9.63     4.24     3.58     5.42     1.79     3.11     3.51     6.47     6.56     5.49     7.97
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1983    16.947   14.311   13.026   14.561   15.542   14.378   17.360   17.146   16.443   15.917   16.228   18.770   15.985
            10.68    10.84    28.51     6.49     7.14     3.24     1.90     2.77     2.27     7.30     6.29    11.32    10.62
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1984    19.753   17.366   17.218   15.329   17.079   17.304   17.411   17.330   14.933   17.586   17.645   21.209   17.534
             9.17    15.44    21.25    10.61     4.61     2.22     2.31     3.21     5.78     2.55    12.08     5.92    10.48
              744      696      744      720      744      720      744      744      720      744      720      744     8784
              744      696      744      720      744      720      744      744      720      744      720      744     8784

   1985    19.903   20.524   18.080   17.279   14.581   16.637   17.729   16.624   15.565   14.842   16.704   20.258   17.446
             8.71     5.41    10.24     4.0      4.48     2.56     3.08     2.30     4.10    12.29    14.78     9.48    10.71
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1986    19.990   17.439   18.876   16.969   15.138   15.950   19.307   16.718   17.325   16.729   17.176   17.794   17.459
             9.15    11.12    13.88     6.39     4.41     8.34     3.40     2.54     2.81     2.95     4.17     7.64     8.14
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1987    18.760                                                                                                      18.760
             1.28                                                                                                        1.28
                5                                                                                                           5
              744                                                                                                        8760

   TOTAL   19.059   18.560   17.179   16.794   15.126   15.998   17.477   16.425   14.926   15.164   16.915   18.829   16.871
            12.98    14.11    15.01    10.54     6.11     5.32     2.71     3.93     4.93     6.67     8.16     9.60    10.20
            12647    11520    12648    12240    12247    12240    12648    12648    12240    12648    12240    12648   148614
            13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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FORT MYERS VARIABLE : PRESSURE HD-1000 DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 4
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	19.375	21.193	16.756	17.427	18.013	17.292	18.063	16.136	16.282	15.109	18.860	19.888	17.843
	20.54	27.65	25.37	11.48	4.56	2.36	2.84	2.93	3.58	5.23	12.74	9.77	14.03
	738	672	744	720	744	720	744	744	720	744	720	744	8754
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1971	19.614	19.189	18.527	17.831	15.835	17.730	18.274	16.039	15.034	14.657	17.672	20.197	17.542
	17.01	21.36	10.86	27.30	5.53	4.44	1.25	5.41	4.07	3.19	8.09	5.83	12.38
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1972	19.696	18.884	16.867	17.781	13.631	13.851	18.960	17.250	16.558	16.377	16.323	19.925	17.178
	12.89	30.28	28.20	8.35	11.11	8.87	2.05	4.47	4.85	12.96	6.55	26.10	16.84
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1973	19.326	20.119	16.957	17.090	16.487	16.463	16.810	16.591	15.457	14.757	19.814	20.152	17.484
	16.62	14.13	11.68	25.39	7.27	5.18	3.30	4.72	4.25	5.08	8.28	13.34	13.03
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1974	21.409	19.201	18.545	19.511	15.680	15.145	17.901	17.553	14.513	18.639	18.566	19.817	18.043
	4.55	21.57	11.55	7.43	6.87	7.09	4.59	1.57	3.30	16.23	5.71	12.33	12.27
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1975	20.639	18.476	17.361	17.817	14.838	16.787	17.347	18.256	15.695	16.792	19.433	20.888	17.860
	10.35	8.10	7.38	6.88	2.24	3.84	1.63	2.50	5.15	4.63	10.50	12.52	9.36
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1976	21.692	21.576	19.455	17.544	15.993	16.462	18.754	16.015	15.478	15.103	18.241	18.296	17.881
	12.81	16.15	6.39	20.72	10.47	4.13	2.21	7.10	4.69	8.14	12.55	17.16	14.65
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1977	18.555	19.790	18.051	19.425	15.646	17.144	18.694	17.554	15.820	16.347	17.370	18.436	17.722
	17.74	12.56	7.60	15.69	12.65	7.37	2.03	2.22	3.21	5.40	15.75	21.83	11.93
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1978	20.241	17.096	17.908	16.402	14.599	16.097	17.354	17.312	15.018	15.110	17.994	18.793	17.130
	25.40	14.62	22.03	15.80	9.07	1.85	3.52	1.69	2.54	4.24	3.93	12.56	12.29
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760

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             FORT MYERS        VARIABLE : PRESSURE  MB-1000    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 4
             MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

               JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

      1979   18.706   20.275   19.545   16.640   15.522   16.326   17.645   16.931   12.199   14.627   17.569   20.149   17.160
              40.40    11.47    21.20    10.09     2.54     8.20     2.92     4.14     9.94     2.03    13.39    11.01    17.43
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

      1980   18.594   19.250   17.490   15.605   14.572   17.304   16.016   16.476   16.000   15.663   17.601   20.077   17.122
              10.93    16.29    15.37     6.67     6.55     2.19     2.22     3.41     3.03     6.00    10.77    12.60    10.44
                744      696      744      720      744      720      744      744      720      744      720      744     8784
                744      696      744      720      744      720      744      744      720      744      720      744     8784

      1981   20.025   20.402   16.266   20.040   13.951   16.371   17.325   15.521   15.406   16.247   17.017   18.569   17.237
              13.41    22.43    27.20    13.29     6.40     3.06     3.67    12.35     4.10     5.27     5.63    10.61    14.46
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

      1982   19.974   18.957   17.370   16.377   15.030   15.006   17.907   17.601   15.020   16.326   18.627   20.152   17.430
              13.26    10.42    14.20     6.13     5.19     6.20     1.70     3.04     4.77     9.32     7.97     7.60    10.41
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

      1983   17.593   14.327   12.500   14.550   15.692   14.255   17.395   16.999   16.753   16.419   16.367   19.192   16.025
              13.30    16.91    37.91    10.29    10.17     4.00     2.26     3.20     3.64     9.01    11.01    10.39    14.03
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

      1984   20.450   17.770   17.463   15.214   17.544   17.536   17.942   17.591   15.550   18.706   18.624   22.401   18.003
              14.93    22.97    29.93    13.43     6.39     4.97     2.20     5.11     5.94     3.06    15.36     9.13    14.57
                744      696      744      720      744      720      744      744      720      744      720      744     8784
                744      696      744      720      744      720      744      744      720      744      720      744     8784

      1985   19.659   20.095   19.007   17.347   14.044   16.161   17.330   16.577   15.957   15.041   17.156   20.743   17.475
              12.40     9.20    14.03     7.02     6.49     3.35     7.30     3.40     5.59    17.00    19.43    12.72    14.22
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

      1986   20.110   17.205   19.130   16.000   15.304   16.041   19.105   16.699   17.700   17.322   17.746   18.339   17.652
              14.22    16.96    10.35     9.07     5.06     8.26     5.67     4.40     4.43     3.95     6.91    11.62    10.00
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

      1987    7.100                                                                                                      7.100
                .63                                                                                                        .63
                  5                                                                                                          5
                744                                                                                                       8760

      TOTAL  19.700   19.144   17.604   17.260   15.406   16.201   17.070   16.000   15.556   16.070   17.945   19.765   17.463
              17.91    20.09    20.70    14.73     8.20     6.21     3.51     4.76     5.03     8.75    11.15    14.37    13.40
              12647    11520    12648    12240    12648    12240    12648    126[illegible]    12240    12648    12240    12648   149015
              13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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         TAMPA               VARIABLE :PRESSURE MB-1000      DATES : 70/ 1/ 1: 5 TO 86/12/31:22
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1970    19.441   21.042   16.252   16.947   17.971   16.033   17.650   15.673   16.550   15.327   18.662   19.675   17.645
         31.46    35.75    29.00    13.92     6.02     2.79     4.09     4.36     3.49     3.96    16.02    12.07    16.47
           739      672      744      720      744      720      744      744      720      744      720      744     8755
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1971    19.420   18.963   18.067   17.435   15.667   17.344   18.041   15.719   15.161   14.851   18.205   20.707   17.456
         20.03    20.31    13.00    32.56     7.03     5.75     1.91     7.33     7.09     3.56    11.62     8.27    15.15
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1972    19.963   19.157   16.902   17.900   13.770   13.793   19.031   17.449   17.268   17.252   16.112   20.004   17.559
         10.66    36.09    37.49    10.93    13.66    11.21     2.25     5.40     6.40    17.26     9.56    35.15    21.30
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1973    20.009   20.404   17.106   17.217   16.336   16.436   16.714   16.772   15.594   15.776   20.296   20.344   17.746
         19.32    10.16    15.14    33.43     9.01     6.26     4.51     6.34     6.40     4.95    12.19    10.24    16.22
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1974    21.002   19.395   18.596   20.090   15.760   14.607   17.069   17.941   14.935   19.716   19.053   19.947   18.327
          6.07    27.71    15.97     9.07     8.51    10.41     6.30     2.24     4.30    10.99     6.46    15.27    15.37
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1975    20.020   18.500   17.404   18.006   14.920   16.942   17.242   18.379   15.046   17.275   20.069   21.355   18.070
         14.05    10.49    11.42     9.29     2.74     4.76     3.12     2.99     6.01     6.09    12.23    16.61    11.03
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1976    22.136   21.909   19.674   17.743   15.631   16.353   18.486   16.356   15.639   15.976   19.177   19.030   18.166
         10.04    20.23     9.45    22.62    15.30     4.39     2.96     7.53     6.00    12.02    17.12    24.75    10.15
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1977    18.909   20.400   18.481   20.131   16.130   17.134   19.103   18.111   16.099   16.970   17.976   19.013   18.199
         23.51    16.39    10.06    20.99    15.95     9.45     2.52     3.46     3.70     7.76    19.05    27.97    15.31
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1978    20.710   18.471   18.322   16.051   15.051   17.396   17.700   17.965   15.757   16.372   18.082   19.562   17.755
         33.04    15.69    27.39     7.01    12.29     3.17     4.57     1.05     3.27     6.40     5.21    17.42    14.74
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760
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        TAMPA                VARIABLE :PRESSURE MB-1000       DATES : 70/ 1/ 1: 5 TO 86/12/31:22
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

 1979   19.214   20.845   20.081   17.011   16.079   17.100   18.000   17.437   12.746   15.531   18.733   20.985   17.804
         64.14    15.49    26.73    13.95     3.90     8.62     3.46     4.57    10.47     4.33    15.75    16.73    20.85
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

 1980   19.024   19.955   17.780   15.970   15.023   17.655   16.987   17.095   16.798   16.043   18.092   20.457   17.566
         14.41    19.42    19.44     9.15     8.55     3.06     3.15     4.22     4.68     6.76    12.25    16.86    12.55
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

 1981   20.157   20.778   16.064   20.317   13.941   16.419    1.278   15.694   15.028   16.999   17.637   18.754   17.461
         15.72    30.91    33.35    16.05     7.02     4.01     4.59    11.07     5.44     6.65     5.79    13.79    16.85
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

 1982   20.146   19.297   17.732   16.663   16.280   14.863   18.038   17.700   15.314   17.077   19.411   20.498   17.752
         17.16    12.51    17.73     8.45     6.40     7.15     1.85     4.16     5.21    10.30     9.46     9.69    12.19
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

 1983   18.085   14.460   12.205   14.712   16.149   14.840   17.911   17.336   17.524   17.578   17.030   20.086   16.516
         14.44    21.49    44.70    13.29    11.62     4.57     2.43     4.01     5.75    11.16    14.68    24.83    18.52
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

 1984   21.559   18.416   18.079   15.542   18.062   17.708   18.339   17.812   16.089   19.626   19.639   23.164   18.686
         21.54    20.90    36.84    14.96     7.77     6.51     2.81     6.09     6.83     4.51    16.55    10.29    17.69
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

 1985   19.927   21.450   19.402   17.977   14.414   16.430   17.612   16.693   16.673   15.711   17.628   21.619   17.942
         15.31    12.95    17.13     9.16     7.45     3.83     6.74     6.11     8.66    20.62    24.74    16.00    16.94
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

 1986   20.764   17.360   19.698   17.310   16.018   16.408   19.203   16.923   18.467   18.137   18.471   19.198   18.179
         18.05    21.66    24.07    11.10     5.70     7.51     7.64     5.86     5.34     4.88     9.49    16.04    13.23
           744      672      744      720      744      720      744      744      720      744      720      743     8759
           744      672      744      720      744      720      744      744      720      744      720      744     8760

 TOTAL  20.137   19.467   17.760   17.529   15.719   16.373   17.977   17.121   16.017   16.837   18.581   20.306   17.814
         22.60    24.94    26.20    17.96    10.09     7.32     4.36     5.86     7.32    10.75    13.77    18.85    16.30
         12643    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12647   149010
         12648    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149016
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PENSACOLA VARIABLE : PRESSURE MB-1000 DATES : 70/ 1/ 1: 6 TO 79/ 1/ 1: 5
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	21.009	21.741	15.730	16.616	18.766	16.807	17.565	15.086	17.592	16.413	20.100	20.250	18.112
	39.52	53.69	29.26	17.51	8.70	5.09	6.62	8.95	3.28	9.89	25.38	20.90	23.16
	738	672	744	720	744	720	744	744	720	744	720	744	8754
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1971	20.029	18.749	18.208	17.439	15.935	17.221	17.353	16.174	15.437	16.319	19.842	20.538	17.766
	29.34	45.63	22.71	48.37	7.57	8.05	3.51	4.96	10.66	4.72	19.71	20.90	21.27
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1972	19.866	19.934	16.548	17.485	14.199	13.387	19.307	17.115	17.327	17.991	17.229	20.499	17.574
	42.66	49.37	53.74	13.81	13.18	14.88	3.09	6.45	7.39	19.75	17.29	52.50	28.07
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1973	20.157	21.144	15.147	16.179	15.165	16.186	15.992	16.812	15.409	17.497	20.157	19.786	17.444
	28.83	18.43	21.56	46.50	21.02	6.22	6.08	5.35	7.43	7.43	25.83	36.32	23.66
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1974	20.597	18.945	17.866	19.371	14.558	14.493	17.177	17.529	15.427	22.223	20.284	19.833	18.194
	13.52	48.21	20.39	18.92	12.55	8.13	7.24	2.33	7.79	20.31	10.83	17.61	21.04
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1975	20.280	17.791	16.557	18.105	14.171	16.416	15.842	18.170	16.383	18.500	20.083	21.990	17.963
	33.93	16.69	24.48	17.17	6.51	7.72	9.23	4.44	16.71	14.24	17.33	28.46	21.34
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1976	23.293	21.769	18.904	18.045	14.762	16.217	18.105	16.901	16.103	17.580	21.070	20.487	18.594
	34.22	29.75	17.90	17.28	23.15	5.01	4.12	5.45	8.85	19.34	27.10	36.34	25.10
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1977	20.269	20.938	17.512	20.154	16.505	16.814	18.647	17.489	15.706	18.437	17.798	19.134	18.269
	40.77	29.29	24.57	30.40	16.86	8.29	2.62	6.20	5.32	10.71	33.16	44.26	23.32
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1978	21.643	19.612	18.127	16.437	14.120	16.992	16.302	17.586	16.181	18.485	19.336	20.411	17.930
	56.21	20.94	32.82	19.24	22.89	6.26	7.09	2.10	3.56	10.62	11.71	37.35	23.37
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760

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              PENSACOLA          VARIABLE : PRESSURE  MB-1000     DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
              MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

                JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1979         20.185   21.003   19.343   16.006   15.698   17.833   17.118   17.234   12.902   16.263   20.155   22.428   18.004
              99.05    28.51    39.94    20.09     7.14     8.39     4.89     5.92    15.86     7.09    26.56    30.11    31.06
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

1980         19.021   20.820   16.809   15.266   14.356   16.881   16.282   17.222   16.740   17.971   20.025   22.878   17.847
              17.65    30.78    33.55    16.91     7.98     3.68     4.04     5.06     6.32    10.07    16.51    21.78    19.89
                744      696      744      720      744      720      744      744      720      744      720      744     8784
                744      696      744      720      744      720      744      744      720      744      720      744     8784

1981         21.991   21.871   16.468   20.858   14.281   16.323   17.048   15.870   17.044   18.818   18.030   19.427   18.206
              30.63    59.44    45.29    20.04     7.52     6.64     6.34     8.28     8.93    12.70     7.40    30.95    25.67
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

1982         20.645   20.308   18.648   17.243   16.739   14.292   17.706   17.788   16.681   18.732   21.030   20.787   18.380
              24.35    22.78    28.47    17.12     9.58     4.88     2.48     3.54     6.92    13.77    19.24    17.31    17.95
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

1983         19.480   14.905   11.835   13.960   15.353   14.592   17.817   17.007   17.869   18.746   16.703   20.943   16.624
              21.71    35.95    52.69    21.07    10.71     5.33     2.73     5.67    14.78    15.06    23.26    59.44    28.45
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

1984         18.885   14.384   13.206    9.883   13.820   13.571   13.360   13.577   13.777   16.090   17.362   19.135   14.768
              39.92    39.15     5.89    13.36    15.28     8.51     4.36     7.63     5.54     9.32    25.48    18.26    26.66
                744      696      744      720      744      720      744      744      720      744      720      744     8784
                744      696      744      720      744      720      744      744      720      744      720      744     8784

1985         20.496   21.556   19.024   18.104   14.043   15.617   16.878   16.121   17.643   15.765   17.683   22.538   17.935
              29.36    26.08    24.41    16.72     6.05     4.24     6.21     6.02    12.13    52.47    36.61    27.86    26.63
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

1986         21.898   16.371   19.954   17.512   15.857   16.000   18.015   16.201   18.641   19.099   18.474   20.581   18.239
              17.47    35.93    43.99    12.79     6.75     6.46     9.92     6.63     5.45    11.40    23.00    32.97    21.12
                744      672      744      720      744      720      744      744      720      744      720      744     8760
               7744      672      744      720      744      720      744      744      720      744      720      744     8760

1987         13.567                                                                                                    13.567
               1.11                                                                                                      1.11
                  6                                                                                                         6
                744                                                                                                      8760

TOTAL        20.596   19.518   17.052   16.980   15.196   15.861   17.089   16.699   16.286   17.937   19.233   20.685   17.755
              36.39    40.06    38.01    27.45    13.52     8.57     6.99     6.77    10.63    16.92    23.47    32.50    24.77
              12648    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149016
              13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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          MOBILE              VARIABLE : PRESSURE  MB-1000     DATES : 70/ 1/ 1: 6 TO 87/ 1/ 3: 4
          MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1970     21.350   22.060   15.609   16.040   18.537   16.509   17.229   14.091   17.418   16.271   19.864   19.869   17.941
          37.94    52.60    26.07    16.65     8.95     5.20     5.97     8.46     3.15    10.73    25.32    20.93    23.17
            738      672      744      720      744      720      744      744      720      744      720      744     8754
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1971     19.606   18.116   17.946   17.229   15.776   17.094   17.135   16.071   15.587   16.747   20.195   20.215   17.647
          29.82    45.05    24.11    49.10     7.94     7.78     3.61     4.15    11.09     4.37    21.77    23.23    21.56
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1972     19.714   19.789   16.299   17.025   14.007   13.261   18.966   16.849   17.033   17.923   17.246   20.333   17.371
          46.73    50.84    54.28    13.82    11.98    10.46     3.28     6.64     7.35    19.06    18.29    51.99    28.91
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

1973     20.078   21.083   14.359   15.679   14.734   15.995   15.951   16.816   15.226   17.501   19.832   19.467   17.201
          31.73    18.50    22.10    45.20    24.02     6.00     5.49     4.87     7.90     7.91    28.86    39.82    25.02
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1974     20.222   18.739   17.555   18.863   14.133   14.436   17.112   17.188   15.394   22.198   20.145   19.492   17.958
          14.11    50.24    19.38    20.81    12.21     7.41     6.57     2.00     9.02    18.86    11.14    17.61    21.11
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1975     20.355   17.283   16.003   17.715   13.739   16.051   15.558   17.875   16.439   18.365   20.510   21.632   17.633
          35.19    17.15    25.72    18.43     7.48     7.72     8.84     4.45    12.98    14.82    16.92    28.63    21.44
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1976     23.126   21.295   18.313   17.716   14.541   16.025   18.066   16.827   15.992   17.571   21.130   20.456   18.414
          36.19    29.38    17.94    15.89    20.76     5.21     3.79     4.63     9.04    18.20    28.17    35.64    24.74
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

1977     20.455   20.689   16.963   19.778   16.257   16.615   18.356   17.113   15.343   18.398   17.447   19.071   18.027
          42.56    32.73    28.26    31.56    15.74     7.55     2.72     5.71     6.48    11.33    33.18    46.10    24.53
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1978     21.939   19.870   18.255   16.424   14.073   17.014   16.333   17.647   16.376   18.383   19.847   20.098   18.030
          54.19    21.66    32.05    17.53    22.49     6.39     6.65     2.12     3.77    10.14    11.74    41.09    23.53
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760
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MOBILE VARIABLE : PRESSURE MB-1000 DATES : 70/ 1/ 1: 6 TO 87/ 1/ 3: 4
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1979	20.749 99.12 744 744	21.094 29.52 672 672	18.943 39.62 744 744	16.163 22.30 720 720	15.701 7.76 744 744	17.644 9.34 720 720	16.661 5.97 744 744	17.185 5.97 744 744	12.816 29.18 720 720	16.216 6.71 744 744	19.309 28.99 720 720	23.040 31.71 744 744	17.951 33.51 8760 8760
1980	18.492 16.75 744 744	20.865 31.73 696 696	17.008 30.67 744 744	14.068 20.72 720 720	13.544 6.64 744 744	16.802 3.63 720 720	16.154 3.98 744 744	16.018 4.24 744 744	16.995 4.95 720 720	17.207 10.58 744 744	19.929 17.82 720 720	23.165 20.43 744 744	17.645 20.60 8784 8784
1981	21.851 30.34 744 744	21.751 63.29 672 672	16.712 45.96 744 744	20.343 20.54 720 720	14.049 7.34 744 744	15.567 5.79 720 720	17.140 6.57 744 744	15.744 5.00 744 744	16.692 9.26 720 720	18.451 12.37 744 744	18.909 6.90 720 720	19.235 33.43 744 744	18.008 26.49 8760 8760
1982	20.449 26.10 744 744	20.022 26.55 672 672	18.332 29.49 744 744	17.154 19.31 720 720	16.805 8.06 744 744	13.438 5.21 720 720	16.804 2.34 744 744	17.100 2.73 744 744	16.397 7.45 720 720	18.033 13.51 744 744	20.627 19.41 720 720	19.443 19.63 744 744	17.877 18.75 8760 8760
1983	19.360 24.35 744 744	14.838 30.14 672 672	11.048 50.63 744 744	13.038 21.10 720 720	15.580 5.40 744 744	13.786 7.58 720 720	17.614 2.85 744 744	17.361 3.27 744 744	17.392 16.49 720 720	18.437 11.62 744 744	16.826 27.65 720 720	19.952 49.62 744 744	16.292 27.45 8760 8760
1984	16.927 66.16 744 744	10.738 37.07 696 696	9.529 55.46 744 744	5.919 10.94 720 720	9.874 16.55 744 744	10.369 6.65 720 720	9.479 4.94 744 744	9.796 6.95 744 744	10.311 5.16 720 720	12.036 10.19 744 744	13.925 24.17 720 720	14.767 20.46 744 744	11.152 29.81 8784 8784
1985	20.886 29.32 744 744	20.757 28.69 672 672	19.310 24.64 744 744	17.657 18.71 720 720	14.039 5.24 744 744	15.412 4.26 720 720	16.499 6.21 744 744	16.300 5.01 744 744	17.123 12.50 720 720	17.036 26.74 744 744	16.318 65.07 720 720	22.241 31.91 744 744	17.787 27.03 8760 8760
1986	21.719 16.38 744 744	17.275 36.83 672 672	19.007 54.89 744 744	17.555 13.11 720 720	15.792 7.36 744 744	15.764 6.53 720 720	18.169 7.85 744 744	15.829 5.60 744 744	18.341 4.07 720 720	18.094 11.17 744 744	19.174 19.51 720 720	20.145 40.93 744 744	18.151 21.77 8760 8760
1987	18.636 4.32 53 744												18.636 4.32 53 8760
TOTAL	20.425 39.45 12695 13392	19.183 43.39 11520 11520	16.544 41.06 12648 12648	16.421 31.82 12240 12240	14.775 14.64 12648 12648	15.399 9.70 12240 12240	16.660 9.15 12648 12648	16.318 8.15 12648 12648	15.934 12.04 12240 12240	17.630 16.48 12648 12648	18.097 27.22 12240 12240	20.134 35.83 12648 12648	17.357 27.28 149063 157776

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      BOOTHVILLE        VARIABLE : PRESSURE MB-1000     DATES : 71/ 5/ 1: 6 TO 86/ 1/ 1: 3
      MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1971                                       14.747   16.404   16.101   14.830   13.330   15.251   19.025   19.060   16.103
                                             6.56     6.23     3.03     3.27    11.36     3.07    20.60    20.35    13.01
                                              730      720      744      744      720      744      720      744     5974
                                              744      720      744      744      720      744      720      744     8760

1972   19.006   19.886   16.263   16.771   14.130   13.498   18.788   16.986   16.753   17.569   17.032   19.949   17.225
        41.30    40.64    49.83    10.77     8.50     7.52     2.57     6.32     6.22    16.03    16.65    50.50    25.08
          744      696      744      720      744      720      744      744      720      744      720      744     8784
          744      696      744      720      744      720      744      744      720      744      720      744     8784

1973   19.885   21.274   13.981   15.671   15.030   16.137   16.070   16.601   14.604   17.058   19.443   19.762   17.099
        31.61    18.99    19.30    41.65    22.38     4.88     4.80     3.75     8.57     6.83    26.85    41.10    24.30
          744      672      744      220      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1974   19.704   19.061   17.444   18.484   14.377   14.752   17.360   16.870   15.094   21.594   19.903   19.626   17.069
        12.29    48.83    14.81    22.48    11.63     7.20     5.82     2.01     7.14    14.04     8.97    15.49    18.77
          744      672      744      720      744      720      744      744      673      744      720      744     8713
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1975   20.066   17.323   15.616   17.156   13.509   15.807   15.717   17.550   16.073   17.906   19.895   21.460   17.349
        33.03    16.52    22.65    18.43     7.72     5.83     5.98     3.60     9.54    13.71    17.94    25.85    19.70
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1976   23.100   21.323   17.657   17.617   14.283   15.479   17.088   16.103   15.171   16.987                     17.556
        34.19    27.69    15.94    14.31    10.44     3.69     3.30     3.79     8.62    15.44                      21.29
          744      696      744      720      744      720      744      744      720      721                       7297
          744      696      744      720      744      720      744      744      720      744                       8784

1977                                                                                                   19.020   19.020
                                                                                                        40.83    40.83
                                                                                                          720      720
                                                                                                          744     8760

1978   21.880   19.924   18.430   16.412                                                                        19.187
        46.53    21.20    32.59    15.44                                                                         33.30
          744      672      744      697                                                                          2857
          744      672      744      720                                                                          8760

1979   20.216   20.947   18.969   15.093    15.74   17.306   15.916   16.371   12.277   15.496   19.626   21.776   17.417
        90.03    28.10    31.80    19.42     8.00     6.94     9.18     6.45     8.33     5.68    29.37    30.70    30.32
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744     .720      744      720      744     8760
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        BOOTHVILLE        VARIABLE : PRESSURE MB-1000      DATES : 71/ 5/ 1: 6 TO 86/ 1/ 1: 3
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1980    18.139   20.417   15.999   14.937   13.547   17.255                                                         16.587
         16.33    29.51    32.79    17.05     5.72     1.13                                                          25.31
           744      696      744      720      744       97                                                           3745
           744      696      744      720      744      720                                                           8784

1981                                                                  14.717   16.267   17.616   17.963   18.632   17.073
                                                                        6.25     8.52    12.27     6.51    32.20    15.16
                                                                         720      720      744      720      744     3648
                                                                         744      720      744      720      744     8760

1982    19.614   19.775   17.371   16.118   15.547   13.000   16.967   17.069   15.576   17.527   19.524   19.120   17.326
         23.00    21.08    27.93    15.54    10.19     4.77     2.24     2.90     5.48    14.20    19.91    19.46    17.16
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1983    20.475                                                                                                      20.475
           .50                                                                                                         .50
             4                                                                                                           4
           744                                                                                                        8760

1984    22.227   18.600   17.405   13.823   17.551   17.639   17.100   17.556   17.300   19.309   21.402   22.592   18.667
         33.02    35.03    51.42     9.40    16.93     5.53     4.09     5.99     6.00    10.67    24.70    18.64    24.83
           734      696      744      720      744      720      744      744      720      744      720      744     8774
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1985    21.050   21.085   18.175   17.200   13.701   15.345   16.319   15.076   16.309   14.098   16.857   21.724   17.233
         30.39    20.79    23.97    16.20     4.38     4.24     7.36     5.66     8.90    70.42    26.33    30.74    27.72
           738      672      744      720      744      720      744      744      720      744      720      744     8754
           744       72      744      720      744      720      744      744      720      744      720      744     8760

1986    14.375                                                                                                      14.375
           .26                                                                                                         .26
             4                                                                                                           4
           744                                                                                                        8760

TOTAL   20.536   19.974   17.035   16.305   14.690   15.639   16.835   16.351   15.367   17.318   19.067   20.252   17.444
         37.92    30.35    31.23    19.91    12.16     7.20     5.77     5.51    10.17    20.32    21.54    31.29    23.35
          8176     7400     8184     7097     8178     7297     7440     8160     7073     8161     7200     8160    94214
         11160     9504    10416    10800    11160    10800    11160    11160    10800    11160    10800    11160   140256
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      PORT ARTHUR       VARIABLE : PRESSURE  MB-1000     DATES : 70/ 1/ 1:10 TO 87/ 1/ 1: 5
      MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1970    21.665   21.999   15.155   13.815   17.569   15.018   16.774   13.924   15.878   16.236   20.049   18.968   17.288
         44.59    49.97    23.52    19.10    14.16     7.43     3.71     5.93     7.20    24.31    36.29    19.85    28.08
           734      672      744      720      744      720      744      744      720      744      720      744     8750
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1971    18.985   16.776   17.405   16.331   14.644   16.351   16.214   15.854   13.916   16.355   19.459   18.334   16.721
         42.73    43.36    32.92    67.39     8.36     5.45     4.63     2.35    16.28     4.08    27.38    29.63    25.91
           744      672      744      720      744      720      744      444      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1972    18.952   19.746   15.829   15.335   14.521   13.310   18.093   17.000   16.027   17.657   17.846   19.898   17.019
         38.52    52.26    48.34    14.92     6.92     5.22     3.24     6.26     6.11    17.35    37.61    61.48    29.53
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1973    20.187   22.129   12.118   14.703   14.002   15.339   15.747   16.506   13.269   16.889   17.866   18.684   16.419
         38.36    25.43    21.77    39.64    35.95     8.19     4.75     2.85    20.99    12.73    46.26    61.80    35.12
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1974    18.600   18.297   15.844   16.760   12.309   13.747   17.043   16.091   14.821   21.772   19.842   18.947   17.010
         18.39    61.04    16.61    35.00    11.65    12.79     5.54     2.77    18.99    16.35    14.41    19.78    25.67
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1975    19.356   17.029   14.594   16.052   12.426   14.894   15.640   16.782   16.886   18.266   19.540   21.643   16.925
         44.56    21.31    30.39    28.11    10.58     9.69     5.92     4.07     8.01    16.80    25.62    31.70    25.54
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1976    23.061   20.736   16.527   16.888   14.221   15.019   17.975   16.912   15.888   18.502   22.209   20.521   18.186
         38.78    29.84    22.39    11.09    17.93     4.93     3.94     3.29     8.62    17.90    32.18    29.89    26.85
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1977    20.897   20.293   11.095   18.437   15.099   15.824   17.536   15.377   14.114   18.276   16.548   18.368   17.139
         41.96    37.46    43.91    42.50     9.02     4.00     2.41     3.70     7.30    18.22    38.81    52.10    29.32
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1978    22.529   20.684   18.525   15.456   12.585   16.238   15.571   16.363   15.451   19.236   18.811   19.209   17.541
         41.07    31.97    35.53    14.38    23.52     7.80     4.51     7.20     7.44    14.90    17.36    54.41    28.63
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           PORT ARTHUR      VARIABLE : PRESSURE  HD-1000     DATES : 70/ 1/ 1:10 TO 87/ 1/ 1: 5
           MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

             JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

250 1979   21.068   20.728   17.997   13.757   14.301   17.004   14.791   16.308   13.681   15.303   20.869   22.406   17.334
            90.41    35.95    32.86    24.54    15.95     9.72    15.96     7.73    13.78    13.71    38.58    41.91    37.65
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

    1980   18.233   20.759   15.529   14.956   12.700   16.108   15.630   15.564   15.317   18.463   20.564   23.079   17.231
            18.43    39.57    43.31    24.95     7.46     2.40     4.47     4.70     4.57    20.88    21.89    25.84    26.38
              744      696      744      720      744      720      744      744      720      744      720      744     8784
              744      696      744      720      744      720      744      744      720      744      720      744     8784

    1981   22.682   21.858   16.328   18.612   12.738   14.068   16.149   14.728   16.620   17.499   18.204   18.740   17.320
            42.81    71.89    43.59    18.55     7.38     9.73     4.92     5.88    13.89    17.27    18.00    43.02    32.29
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

    1982   19.297   20.850   16.653   15.557   14.539   13.304   16.650   16.967   16.092   18.177   19.312   18.372   17.129
            37.15    31.40    32.34    25.98    12.64     4.54     2.21     3.27    10.52    19.94    28.61    41.58    24.96
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

    1983   19.429   14.807   11.738   12.269   13.411   13.056   17.334   16.281   17.020   18.605   15.479   21.692   15.952
            30.56    27.42    46.27    25.76     7.24     3.55     2.63     5.52    17.51    15.49    27.49    94.19    34.00
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720    . 744      720      744     8760

    1984   23.911   18.100   16.176   11.915   15.777   16.114   16.253   16.371   17.145   17.020   20.721   20.759   17.529
            37.24    39.14    42.82    15.79    30.98     5.28     3.74     4.72    12.65    20.49    39.37    31.58    32.24
              744      696      744      720      744      720      744      744      720      744      720      744     8784
              744      696      744      720      744      720      744      744      720      744      720      744     8784

    1985   22.162   21.731   17.633   16.569   13.697   15.070   16.385   15.359   16.590   14.892   16.788   22.873   17.458
            44.15    20.25    29.16    27.78     5.19     3.95     6.20     5.09     8.71    54.70    18.34    33.02    30.14
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

    1986   22.776   16.009   19.289   16.483   14.021   14.777   17.904   16.135   16.881   18.572   18.151   21.281   17.716
            18.13    37.42    64.73    12.14     8.03     7.91     6.55     3.18     4.54    14.27    30.98    28.27    25.61
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

    1987   18.400                                                                                                      18.400
              .33                                                                                                         .33
                6                                                                                                           6
              744                                                                                                        8760

    TOTAL  20.814   19.563   16.026   15.519   14.033   15.061   16.572   16.031   15.619   17.740   18.956   20.222   17.172
            44.88    43.40    39.61    29.52    15.41     8.03     5.88     5.31    12.47    21.19    31.61    43.77    29.53
            12644    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149012
            13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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CORPUS CHRISTI    VARIABLE : PRESSURE  MB-1000     DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN     FEB     MAR     APR     MAY     JUN     JLY     AUG     SEP     OCT     NOV     DEC    ANNUAL

1970   20.423  20.726  13.951  11.342  15.604  14.413  15.351  12.391  13.870  14.926  19.171  17.405  15.766
        44.77   48.07   30.65   24.36   21.50   11.09    2.97    9.06    9.99   31.39   49.79   18.30   33.22
          738     672     744     720     744     720     744     744     720     744     720     744    8754
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1971   17.430  15.046  15.573  14.101  12.101  14.159  14.822  14.634  11.512  14.755  17.695  16.825  14.893
        49.20   48.08   44.13   76.33   14.83    4.88    5.32    2.89   32.13    8.14   30.89   34.39   32.26
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1972   17.466  18.438  14.049  12.644  13.221  12.015  16.176  15.514  14.483  15.812  16.773  19.019  15.468
        55.77   45.05   43.63   18.33    6.97    4.39    4.03    6.83    6.13   16.43   31.77   64.34   29.88
          744     696     744     720     744     720     744     744     720     744     720     744    8784
          744     696     744     720     744     720     744     744     720     744     720     744    8784

1973   19.459  21.117  10.459  12.577  12.637  13.373  14.490  15.313  12.311  15.509  16.096  18.216  15.098
        58.03   27.79   23.80   43.83   44.95   12.21    4.53    2.50   15.79   17.21   50.04   67.78   39.79
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1974   17.995  17.889  13.971  14.601  10.468  12.337  15.962  14.367  14.221  20.162  18.930  18.455  15.771
        23.71   70.86   18.94   42.03   12.52   18.45    4.66    3.59   11.19   16.96   22.41   25.18   30.05
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1975   18.358  16.229  12.347  12.793  10.295  13.060  14.671  15.492  15.725  16.881  18.141  20.615  15.382
        51.54   30.76   37.54   32.08   12.11   13.46    4.88    3.95    8.47   20.93   37.84   38.14   32.22
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1976   22.243  19.333  14.160  14.073  13.186  13.271  16.317  16.076  14.786  17.604  21.709  20.172  16.915
        58.43   40.41   29.12   14.44   20.20    6.88    4.01    3.11    8.48   19.25   32.89   30.75   32.01
          744     696     744     720     744     720     744     744     720     744     720     744    8784
          744     696     744     720     744     720     744     744     720     744     720     744    8784

1977   20.241  19.408  13.298  16.879  12.813  14.183  16.345  13.564  12.667  16.916  15.732 17.125  15.744
        39.91   39.81   51.82   50.82    7.99    4.13    2.33    4.41    6.66   21.85   45.97   48.79   32.69
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1978   21.569  19.923  17.575  13.211  10.323  14.610  13.899  14.904  13.630  18.165  17.439  18.190  16.104
        31.59   47.74   42.23   14.69   26.73    7.48    4.51    5.76   11.92   17.18   22.61   67.67   34.37
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760
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        CORPUS CHRISTI    VARIABLE : PRESSURE  MB-1000    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN     FEB     MAR     APR     MAY     JUN     JLY     AUG     SEP     OCT     NOV     DEC   ANNUAL

1979   20.488  19.698  16.123  12.628  12.638  15.703  13.588  14.974  13.248  14.173  20.039  21.869  16.196
        80.30   43.47   32.98   24.92   27.80   13.99   11.12    7.56   12.98   20.25   44.51   49.65   42.15
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1980   17.177  19.710  14.225  14.302  10.802  14.372  14.580  13.327  13.804  17.582  20.183  22.383  16.014
        21.61   45.11   49.81   34.18   11.86    2.92    4.55   15.68    4.02   29.80   25.63   32.28   33.55
          744     696     744     720     744     720     744     744     720     744     720     744    8784
          744     696     744     720     744     720     744     744     720     744     720     744    8784

1981   21.761  20.664  15.534  16.349  10.961  12.054  14.844  13.616  15.426  15.689  17.240  17.612  15.940
        41.77   70.46   39.93   20.72   10.75   11.93    4.55    6.20   16.33   21.87   27.86   43.10   34.91
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1982   18.128  19.882  14.444  13.472  12.084  11.979  15.179  15.526  14.295  16.319  17.762  17.450  15.520
        48.34   38.56   39.66   31.29   15.26    5.03    2.28    2.80    9.89   26.02   34.10   49.93   30.62
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1983   18.934  14.411  11.084  11.017  11.080  11.473  15.574  15.355  15.207  17.211  14.197  21.404  14.775
        37.13   24.74   42.48   35.62   10.59    4.13    5.31    5.16   10.30   17.44   31.69  102.71   30.29
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1984   22.468  16.859  13.764   9.409  12.805  13.268  14.247  14.250  14.596  13.707  18.462  17.578  15.121
        35.67   43.66   40.24   29.85   39.26    6.27    3.80    3.93   16.35   23.10   43.86   43.00   37.47
          744     696     744     720     744     720     744     744     720     744     720     744    8784
          744     696     744     720     744     720     744     744     720     744     720     744    8784

1985   22.269  20.711  15.912  14.466  12.487  13.455  15.175  14.362  14.519  14.800  15.193  22.403  16.297
        53.02   27.34   32.03   35.36    9.00    6.15    6.36    4.24    7.55   17.90   20.06   34.77   31.96
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1986   22.477  15.375  17.942  14.009  11.981  13.424  16.709  14.677  14.769  17.201  17.749  20.635  16.436
        28.31   35.91   68.33   16.38   12.05    9.65    6.77    3.17    5.90   17.14   31.45   19.80   29.63
          744     672     744     720     744     720     744     744     720     744     720     744    8760
          744     672     744     720     744     720     744     744     720     744     720     744    8760

1987   18.350                                                                                          18.350
          .25                                                                                             .25
            6                                                                                               6
          744                                                                                            8760

TOTAL  19.933  18.554  14.377  13.369  12.080  13.362  15.168  14.608  14.063  16.323  17.795  19.261  15.732
        48.63   47.22   42.94   35.26   19.62    9.62    5.60    6.20   13.06   22.70   37.70   48.90   34.14
        12648   11520   12648   12240   12648   12240   12648   12648   12240   12648   12240   12648  149016
        13392   11520   12648   12240   12648   12240   12648   12648   12240   12648   12240   12648  157776
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BROWNSVILLE VARIABLE : PRESSURE MB-1000 DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	19.551	20.293	13.566	11.110	15.051	14.144	15.055	12.312	13.288	14.463	19.103	17.065	15.385
	39.44	43.74	32.37	22.53	21.47	9.96	2.61	5.06	9.25	26.58	47.12	15.38	30.61
	738	672	744	720	744	720	744	744	720	744	720	744	8754
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1971	17.151	14.642	15.358	13.439	11.845	13.896	14.892	14.360	11.364	14.367	17.070	16.358	14.567
	42.47	47.03	42.38	78.05	13.96	4.45	4.71	2.64	17.92	7.04	27.75	30.87	28.38
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1972	16.981	18.018	13.494	12.284	12.392	11.537	15.725	15.235	14.042	15.090	15.866	18.424	14.923
	48.40	42.65	38.30	16.30	7.59	3.99	3.68	6.19	5.40	13.40	26.78	57.99	27.10
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1973	18.869	20.191	10.045	12.005	12.313	12.815	14.195	14.802	11.994	14.870	15.608	17.032	14.599
	53.49	26.40	25.04	42.40	41.82	9.17	4.09	2.31	12.63	15.25	44.89	61.33	36.75
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1974	17.375	17.760	13.464	13.891	9.915	11.772	15.806	14.069	13.212	19.024	18.126	17.846	15.177
	20.33	67.10	15.77	38.39	12.26	16.31	4.12	3.51	8.26	14.80	20.52	20.48	27.38
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1975	18.077	15.753	12.042	12.246	9.694	12.560	14.231	14.990	15.163	16.356	17.554	20.185	14.903
	45.38	29.12	32.94	27.82	11.54	11.22	3.92	4.21	7.80	18.11	33.04	30.72	29.36
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1976	21.699	19.313	13.591	13.018	12.699	12.860	15.748	15.671	14.281	16.896	20.745	19.587	16.404
	22.29	37.58	22.67	13.16	18.23	6.09	4.13	2.62	7.45	17.83	28.65	20.76	29.23
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1977	19.265	19.012	12.789	16.288	12.315	13.951	16.012	13.375	12.510	16.313	15.504	16.788	15.321
	36.63	31.63	48.28	51.44	7.39	3.64	1.94	4.20	6.11	18.61	42.19	40.97	29.50
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1978	20.476	19.088	17.093	12.743	9.852	14.262	13.817	14.738	12.815	17.257	16.754	17.467	15.515
	26.72	48.41	43.91	14.04	26.88	7.11	4.20	5.26	9.92	15.29	19.54	59.53	31.65
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760

BROWNSVILLE VARIABLE : PRESSURE MB-1000 DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1979	19.414	18.772	15.672	11.164	12.042	15.093	13.203	14.479	12.396	13.630	18.977	21.032	15.474
	82.01	39.01	29.03	24.14	26.53	13.30	9.30	7.01	11.97	10.11	38.22	44.65	30.75
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1980	16.513	19.039	13.596	13.937	10.145	14.150	14.177	12.209	13.470	15.051	20.050	21.575	15.300
	20.73	39.47	46.22	34.71	11.05	2.20	4.25	42.47	3.95	10.53	29.70	27.02	33.72
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1981	21.199	19.981	15.223	15.600	10.076	11.192	14.480	13.666	14.347	15.236	17.139	16.605	15.442
	30.41	60.22	32.35	21.16	9.52	10.97	4.11	5.13	15.42	17.70	21.72	39.11	30.51
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1982	17.579	17.995	14.523	12.630	11.937	11.401	14.700	15.294	14.080	15.391	17.262	16.466	14.926
	39.40	37.71	47.01	26.16	12.14	5.54	2.30	2.33	7.56	24.35	27.30	41.21	26.96
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1983	18.300	13.723	10.655	10.703	10.500	11.083	15.155	15.125	14.617	16.707	13.067	20.198	14.249
	36.50	22.93	39.29	35.03	9.40	4.29	5.10	4.77	14.62	15.49	27.79	90.06	34.76
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1984	22.104	17.284	14.253	10.116	13.294	13.070	14.837	14.955	14.546	14.371	18.729	17.807	15.525
	30.16	30.60	39.11	26.57	33.37	5.33	3.21	3.51	13.06	20.31	36.84	38.70	32.66
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1985	21.017	19.460	15.290	13.969	12.114	12.900	15.009	14.130	13.054	14.186	14.632	21.239	15.640
	47.39	25.70	27.64	30.64	7.00	5.75	5.62	3.41	5.40	13.71	19.15	29.51	27.34
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1986	21.590	14.707	17.222	13.362	11.377	12.986	16.571	14.237	14.366	16.525	16.932	19.334	15.796
	26.46	29.77	60.07	15.13	11.37	9.22	5.53	2.30	5.11	15.25	24.03	17.05	26.74
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1987	18.550												18.550
	.36												.36
	6												6
	744												8760
TOTAL	19.245	17.952	13.993	12.906	11.669	12.970	14.919	14.337	13.550	15.678	17.209	18.505	15.249
	43.05	43.16	40.60	33.02	18.49	9.00	5.00	7.22	10.54	18.05	33.60	42.56	30.90
	12648	11520	12648	12240	12648	12240	12648	12648	12240	12648	12240	12648	149016
	13392	11520	12648	12240	12648	12240	12648	12648	12240	12648	12240	12648	157776

C.1.2 AIR TEMPERATURE

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KEY WEST VARIABLE : AIR TEMPERATURE C DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 4
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	19.295	19.206	22.546	25.772	25.880	27.980	28.745	28.290	27.244	26.027	21.915	22.139	24.622
	14.57	8.24	7.02	2.86	2.00	2.56	2.12	2.22	2.74	3.31	10.63	5.57	15.92
	738	672	744	720	744	720	744	744	720	744	720	744	8754
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1971	21.424	22.020	22.484	23.934	26.905	28.208	28.934	28.600	28.125	27.262	24.237	24.403	25.567
	14.49	14.57	10.20	8.65	2.82	2.56	2.17	2.69	2.51	2.87	4.24	2.59	12.76
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1972	23.646	22.059	24.035	25.301	26.960	27.446	28.690	29.112	28.236	27.004	25.426	22.990	25.923
	4.78	8.56	4.17	3.87	2.67	3.06	2.42	2.22	2.83	2.78	6.64	11.42	9.63
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1973	22.411	19.296	24.117	24.660	26.532	28.195	28.373	28.424	28.331	26.616	25.370	21.238	25.328
	11.15	10.88	5.59	3.93	3.70	2.12	2.49	2.89	2.00	3.77	4.44	13.58	13.90
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1974	24.560	21.588	24.131	25.080	26.764	28.133	28.583	28.940	29.035	25.829	23.824	22.133	25.740
	1.64	11.53	4.87	3.67	3.16	1.52	1.98	1.85	1.56	2.79	4.61	7.27	9.93
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1975	23.455	24.033	24.549	26.027	27.782	29.046	28.972	29.167	28.262	27.359	24.067	21.721	26.213
	5.84	4.48	6.00	3.44	1.91	2.20	2.04	1.82	1.60	3.17	10.03	8.28	10.28
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1976	19.768	21.266	24.715	24.339	26.626	26.841	28.849	29.026	28.537	26.309	23.408	21.471	25.110
	11.56	7.23	2.30	3.48	1.85	2.38	1.79	2.16	2.21	4.91	6.94	9.46	13.62
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1977	18.799	19.903	24.494	24.808	26.072	28.168	28.797	28.502	28.354	25.488	23.561	20.721	24.829
	14.37	9.86	5.08	3.30	2.83	2.28	2.04	2.35	2.22	5.57	6.45	14.28	16.98
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1978	17.970	17.169	21.285	24.899	27.455	28.839	29.423	29.344	28.566	26.532	25.094	24.226	25.112
	14.28	10.96	9.11	4.40	2.89	2.68	1.85	2.66	2.17	3.27	2.72	5.37	21.51
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760

KEY WEST VARIABLE : AIR TEMPERATURE C DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 4
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1979	20.662	20.371	22.346	25.622	27.054	28.595	29.344	29.157	28.330	26.752	24.627	22.104	25.440
	9.81	12.52	5.09	2.37	2.48	2.35	2.07	2.49	1.96	2.17	5.40	6.28	14.60
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1980	21.482	19.023	23.725	25.215	26.994	28.673	29.324	29.518	28.875	27.344	24.066	20.137	25.384
	8.80	13.70	13.59	5.12	4.61	2.63	2.82	2.01	2.51	2.75	7.02	7.82	18.48
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1981	16.246	20.361	21.511	25.401	26.218	29.242	29.558	28.779	28.234	27.088	23.110	21.251	24.696
	11.39	9.75	6.46	2.70	3.62	2.20	1.78	3.20	2.96	3.22	6.01	14.50	22.86
	744	672	744	720	343	720	744	744	720	744	720	744	8359
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1982	21.568	24.121	24.936	26.811	26.457	28.386	29.645	28.819	27.814	25.591	23.678	22.714	25.884
	14.12	4.77	7.24	3.00	3.42	2.58	2.42	2.92	3.36	5.76	3.66	9.64	11.27
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1983	19.653	20.094	20.818	23.147	25.759	27.725	28.465	28.828	27.981	26.670	24.218	22.479	24.677
	8.42	4.88	5.87	5.87	3.08	2.48	2.33	2.76	2.78	2.71	4.46	18.99	15.82
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1984	20.349	21.391	22.613	24.582	26.818	27.258	28.260	28.627	27.297	26.419	23.462	23.101	25.028
	11.94	8.81	9.98	5.47	2.24	2.89	1.93	2.14	2.07	1.47	5.40	6.88	12.26
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1985	19.621	21.883	23.878	24.509	27.347	29.473	28.504	29.028	27.914	27.578	25.565	20.485	25.496
	15.01	11.38	4.09	5.51	3.81	3.41	3.44	3.26	3.07	2.15	3.80	15.22	16.79
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1986	19.839	22.200	21.812	23.544	26.671	28.615	29.438	28.752	28.782	27.316	26.843	23.772	25.645
	10.58	12.13	19.32	5.38	2.86	2.53	2.49	3.19	2.65	4.06	1.84	4.58	15.64
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1987	21.778												21.778
	1.76												1.76
	5												5
	744												8760
TOTAL	20.633	20.940	23.176	24.918	26.740	28.284	28.935	28.877	28.231	26.658	24.263	22.181	25.337
	15.01	12.65	9.05	5.07	3.19	2.96	2.43	2.62	2.64	3.68	6.78	10.98	15.02
	12647	11520	12648	12240	12247	12240	12648	12648	12240	12648	12240	12648	148614
	13392	11520	12648	12240	12648	12240	12648	12648	12240	12648	12240	12648	157776

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FORT MYERS        VARIABLE : AIR TEMPERATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 4
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

1970    14.254   15.343   19.200   23.526   23.676   26.464   27.251   27.352   26.660   25.089   18.990   18.066   22.266
         29.80    22.65    18.02    13.06    13.27     8.70     8.71     7.62     7.46    10.75    34.77    24.73    36.63
           738      672      744      720      744      720      744      744      720      744      720      744     8754
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1971    18.130   18.661   18.951   21.189   24.957   26.031   26.808   26.818   26.011   25.410   21.529   21.820   23.055
         37.63    36.99    31.65    27.77    18.64    10.80     9.86     7.63     6.92     9.56    16.88    14.11    29.10
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1972    20.948   18.507   21.208   23.043   25.236   26.703   27.143   27.258   26.960   24.801   21.358   19.049   23.534
         20.80    27.03    22.91    19.97    13.00     8.95     9.61     9.87    10.50    12.77    22.61    36.42    27.41
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1973    18.114   15.507   21.587   22.003   25.473   27.130   26.713   26.616   26.920   24.331   22.263   16.681   22.817
         30.38    26.44    19.64    18.33    19.37    11.48     9.53     7.74     7.45    15.95    20.53    37.30    34.25
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1974    22.056   18.639   21.756   23.323   25.405   25.760   26.505   26.845   27.435   23.244   20.822   18.047   23.347
         14.45    34.57    24.78    26.23    16.30     9.27     6.59     7.54     7.84    13.89    21.56    27.67    26.48
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1975    20.373   20.975   21.478   23.404   26.510   27.236   26.905   27.643   26.213   25.424   21.161   17.392   23.740
         25.64    23.92    28.30    23.83    14.35    12.73     8.52     8.91     6.48     9.23    30.11    28.58    28.82
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1976    15.824   17.838   21.584   21.657   24.527   25.112   26.818   26.994   25.470   22.258   19.086   16.749   22.006
         32.80    29.32    18.94    22.87    13.27     8.36     9.54     9.41     7.82    14.51    22.08    27.84    32.08
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1977    13.334   15.943   21.039   21.674   24.074   26.414   26.414   26.400   26.894   22.998   20.693   17.280   21.957
         33.47    27.75    21.54    24.58    14.89     9.57     7.82     6.76     7.03    18.70    23.62    35.40    37.83
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1978    14.947   13.740   18.268   22.288   25.440   26.841   27.522   27.535   27.048   24.822   22.722   20.432   22.684
         32.25    23.50    23.84    19.88    14.21    10.41     9.03     8.71     9.33    12.56    16.71    20.29    38.01
           744      672      744      720      744      720      744      744      720      744      720      744     7760
           744      672      744      720      744      720      744      744      720      744      720      744     8760
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FORT MYERS VARIABLE : AIR TEMPERATURE C DATED : 70/ 1/ 1: 6 TO 87/ 1/ 1: 6
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1979	16.930 20.13 744 744	17.223 31.34 672 672	19.789 19.80 744 744	24.110 15.41 720 720	25.372 13.42 744 744	27.521 13.73 720 720	28.066 10.70 744 744	27.697 10.24 744 744	27.706 6.50 720 720	25.518 11.79 744 744	22.701 21.47 720 720	18.775 19.60 744 744	23.540 33.95 8760 8760
1980	17.046 20.40 744 744	15.630 33.61 696 696	21.699 32.35 744 744	22.404 18.49 720 720	25.215 15.96 744 744	28.486 12.05 720 720	28.304 10.83 744 744	27.900 10.17 744 744	28.542 10.25 720 720	25.355 13.53 744 744	21.170 23.20 720 720	16.661 24.66 744 744	23.291 39.99 8784 8784
1981	12.609 34.69 744 744	18.547 33.17 672 672	19.506 23.20 744 744	24.306 21.37 720 720	26.199 20.82 744 744	28.971 15.62 720 720	29.365 10.25 744 744	28.216 8.55 744 744	27.698 10.15 720 720	26.069 14.06 744 744	20.370 31.22 720 720	18.113 43.11 744 744	23.340 40.60 8760 8760
1982	18.203 43.53 744 744	21.911 20.77 672 672	22.500 23.87 744 744	24.412 16.09 720 720	24.381 19.01 744 744	28.450 9.18 720 720	28.206 10.35 744 744	27.307 10.36 744 744	25.960 8.99 720 720	23.509 16.72 744 744	21.576 15.66 720 720	19.095 27.26 744 744	23.062 20.20 8760 8760
1983	16.608 25.43 744 744	16.901 14.19 672 672	18.522 17.09 744 744	21.081 19.53 720 720	24.379 15.48 744 744	25.992 10.88 720 720	27.010 10.95 744 744	26.823 9.46 744 744	25.763 9.93 720 720	24.321 12.43 744 744	20.176 16.30 720 720	18.608 30.33 744 744	22.213 31.05 8760 8760
1984	16.287 25.24 744 744	17.927 24.69 696 696	19.311 25.20 744 744	22.112 20.37 720 720	25.592 13.64 744 744	26.990 14.56 720 720	26.718 11.30 744 744	27.992 11.40 744 744	26.449 10.43 720 720	24.015 13.64 744 744	20.603 21.50 720 720	20.240 25.84 744 744	22.934 32.70 8784 8784
1985	15.737 37.80 744 744	19.024 35.22 672 672	21.807 20.75 744 744	22.944 21.27 720 720	26.338 16.04 744 744	28.165 13.96 720 720	27.016 12.93 744 744	27.842 11.44 744 744	27.586 10.69 720 720	27.012 9.46 744 744	23.566 14.98 720 720	17.157 34.55 744 744	23.700 37.75 8760 8760
1986	17.064 29.42 744 744	19.430 24.30 672 672	19.407 33.40 744 744	22.086 24.04 720 720	25.250 10.20 744 744	26.380 10.69 720 720	27.469 10.89 744 744	27.024 11.00 744 744	27.473 11.30 720 720	25.405 15.65 744 744	24.879 10.03 720 720	20.504 17.05 744 744	23.546 30.32 8760 8760
TOTAL	17.019 36.14 12647 13392	17.748 31.73 11520 11520	20.440 25.62 12648 12648	22.680 21.79 12240 12240	25.170 16.53 12648 12648	26.980 12.20 12240 12240	27.355 10.81 12648 12648	27.310 9.47 12648 12648	26.870 9.41 12240 12240	24.720 14.37 12648 12648	21.393 23.52 12240 12240	18.604 30.64 12648 12648	23.050 34.09 149015 157776

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        TAMPA               VARIABLE : AIR TEMPERATURE  C     DATES : 70/ 1/ 1: 5 TO 86/12/31:22
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1970    12.058   13.809   18.131   22.559   24.225   26.313   27.720   27.490   26.660   24.120   16.291   16.496   21.372
         36.86    28.52    22.42    20.46    17.51    12.85    10.63     8.02    10.72    14.98    44.75    34.95    50.95
           739      672      744      720      744      720      744      744      720      744      720      744     8755
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1971    15.186   16.896   17.116   20.681   24.344   26.971   27.053   26.732   26.075   24.490   19.421   20.212   22.128
         44.34    44.15    35.07    30.64    20.86    11.46    10.86     9.75    10.38    14.11    26.33    16.01    40.04
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1972    19.014   15.588   19.450   21.991   24.429   26.724   26.879   26.827   26.715   23.888   19.985   18.116   22.489
         28.00    27.53    21.99    21.93    13.32    10.12    12.21    12.08    13.70    15.72    30.23    41.96    35.05
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1973    16.026   13.927   20.812   20.852   24.790   27.335   27.753   26.797   26.681   23.996   21.380   15.250   22.180
         38.94    32.54    20.63    22.01    18.54     9.64     8.86     9.64     7.32    20.03    21.09    39.50    42.78
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1974    21.147   16.451   21.192   21.975   25.225   26.420   26.851   27.192   27.484   22.397   19.675   16.309   22.731
         10.13    36.04    22.12    23.21    15.08    10.16     8.75     9.11     8.11    19.51    26.67    28.09    32.40
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744     720      744      744      720      744      720      744     8760

1975    17.992   19.020   19.862   23.074   26.952   27.502   27.790   27.690   26.789   24.855   19.881   15.679   23.111
         29.79    26.55    32.50    25.13    14.02    10.63     8.38    10.77     8.82    14.41    42.11    38.96    39.50
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1976    13.650   17.087   21.225   21.651   24.454   25.602   27.313   26.962   25.898   21.697   16.748   15.042   21.456
         39.48    32.29    20.75    19.78    11.52     9.72     8.35     9.52     9.03    20.41    30.28    33.14    41.55
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1977    10.818   14.066   21.209   22.075   24.662   28.191   27.436   27.337   27.179   22.163   19.366   14.771   21.640
         35.59    33.57    25.51    25.11    15.82    12.13     9.79     7.51     9.04    27.54    25.20    40.35    53.46
           744      672      744      720      744      720      744     744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1978    12.495   11.521   17.550   22.392   25.741   27.626   27.675   27.545   26.916   23.628   21.535   18.017   22.010
         30.39    23.34    29.90    20.51    11.08     8.41     7.16     8.97     9.31    15.99    17.10    26.44    40.05
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760
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TAMPA VARIABLE : AIR TEMPERATURE C DATES : 70/ 1/ 1: 5 TO 86/12/31:22
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1979	14.416	14.793	18.349	23.216	24.209	26.859	28.324	27.112	27.170	23.934	20.246	16.730	22.150
	35.39	36.46	20.15	15.05	12.76	10.17	6.74	8.42	5.13	15.14	27.43	26.08	41.32
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1980	16.542	13.453	19.792	21.265	25.020	27.408	28.421	27.655	26.545	22.905	18.093	13.839	21.839
	26.80	35.94	32.63	16.82	12.60	9.75	6.97	9.53	9.41	17.20	26.93	28.59	45.67
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	745	720	744	720	744	744	720	744	720	744	8784
1981	9.505	15.983	16.920	22.425	23.849	26.849	27.317	26.537	25.331	23.135	17.460	14.705	20.850
	33.20	32.06	21.93	15.88	17.49	12.15	10.12	10.28	13.70	15.29	32.43	42.86	51.91
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1982	15.147	19.454	19.716	21.802	23.545	27.025	26.942	27.176	26.150	23.157	21.181	19.538	22.579
	43.97	17.86	24.51	15.71	16.34	7.54	8.22	6.51	10.53	22.01	17.64	34.55	32.13
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1983	14.448	15.666	17.342	20.394	24.721	26.762	27.118	27.152	25.591	23.690	18.743	15.388	21.449
	30.76	20.15	22.52	22.74	14.35	8.57	9.77	7.16	10.91	14.52	19.58	50.76	41.87
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1984	13.922	16.759	18.539	21.561	25.353	26.768	26.615	27.510	26.081	23.805	17.864	19.100	22.007
	34.36	31.93	31.95	19.11	13.71	11.61	8.46	8.42	10.32	14.76	32.78	33.53	40.53
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1985	13.185	17.061	20.588	22.287	26.243	28.114	27.199	27.521	26.240	25.546	22.776	14.765	22.649
	44.20	35.56	20.58	19.37	15.34	10.68	8.07	8.44	10.22	10.72	14.96	41.99	44.74
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1986	14.742	18.056	18.310	20.827	24.881	26.816	27.884	27.410	27.071	24.371	24.057	18.639	22.773
	27.61	23.31	33.83	20.04	16.43	9.59	8.73	9.91	10.14	16.93	11.47	19.07	35.51
	744	672	744	720	744	720	744	744	720	744	720	743	8759
	744	672	744	720	744	720	744	744	720	744	720	74	8760
TOTAL	14.724	15.857	19.183	21.825	24.861	27.017	27.429	27.214	26.505	23.633	19.735	16.670	22.083
	41.87	34.53	27.94	21.38	15.77	10.68	9.23	9.21	10.13	17.90	30.24	37.69	42.54
	12643	11520	12648	12240	12648	12240	12648	12648	12240	12648	12240	12647	149010
	12648	11520	12648	12240	12648	12240	12648	12648	12240	12648	12240	12648	149016

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        PENSACOLA        VARIABLE : AIR TEMPERATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL

1970    8.107   10.661   15.320   21.504   24.336   26.802   27.896   27.335   27.436   21.874   13.977   13.731   19.972
        35.70    25.52    20.04    18.29    15.63    11.59     9.71     7.08    10.82    14.24    36.08    34.16    66.95
          738       67      744      720      744      720      744      744      720      744      720      744     8754
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1971   11.756   11.744   14.640   19.181   22.832   26.771   26.831   26.521   25.592   22.362   15.504   16.853   20.097
        41.46    43.07    28.69    29.95    15.67     9.51     7.41     7.65     6.99    18.83    28.10    25.62    52.81
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1972   14.627   12.514   16.442   20.455   23.239   26.421   27.307   28.371   27.478   21.789   14.586   13.570   20.593
        49.10    28.48    24.02    17.91    10.68    12.71     9.12    10.47     9.46    22.18    39.61    41.61    56.03
          744      696      744      720      744      720      744      744      720      744      720      744     8784
          744      696      744      720      744      720      744      744      720      744      720      744     8784

1973   11.257   11.029   18.022   18.775   23.709   27.146   28.371   27.273   26.493   22.547   18.861   12.157   20.522
        33.86    35.95    14.62    17.87    12.89     9.02     7.58     8.20     8.07    23.66    27.82    46.12    58.38
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1974   18.251   13.575   18.796   20.059   25.034   26.284   27.528   26.750   25.312   19.632   15.816   13.339   20.913
        15.37    43.49    20.20    19.03    10.67    11.15    10.43     7.30    11.09    20.37    30.56    35.60    43.74
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1975   13.906   16.023   16.413   19.191   24.873   26.879   27.262   27.333   23.993   21.146   16.059   11.481   20.403
        32.91    30.14    35.71    20.76    10.00     8.47     6.74     7.40    23.81    17.19    48.30    38.69    52.41
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1976   10.655   14.820   17.675   20.471   21.559   25.353   26.678   26.396   24.431   17.221   10.891    9.783   18.833
        36.01    24.68    17.57    18.66    10.52    10.68     9.33     9.84     9.07    26.15    29.26    28.80    55.53
          744      696      744      720      744      720      744      744      720      744      720      744     8784
          744      696      744      720      744      720      744      744      720      744      720      744     8784

1977    5.299   10.774   16.670   19.623   23.223   27.376   27.176   26.176   26.152   19.276   16.871   11.656   19.222
        40.07    33.34    25.05    18.00    13.47    13.18     8.66     5.42     6.21    26.26    21.14    20.55    68.96
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1978    6.294    8.066   14.280   20.229   24.220   27.563   27.987   27.910   27.124   20.727   18.890   12.903   19.737
        32.65    25.44    25.85    13.44    11.97    10.46     7.18     8.35    11.15    24.79    17.63    48.16    74.90
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760
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       PENSACOLA          VARIABLE : AIR TEMPERATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
       MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1979    7.603   10.109   15.328   20.639   23.062   26.755   27.343   27.007   25.165   20.670   14.759   10.792   19.147
        40.55    35.83    19.36    12.58    11.65    11.40     6.73     8.05    11.30    24.97    29.35    27.87    66.56
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1980   12.719   10.325   15.783   18.630   23.757   27.190   29.191   28.311   26.996   18.669   13.952    9.847   19.643
        21.78    46.45    33.58    18.38    10.07    10.32    13.17     8.99     9.64    26.01    32.98    33.18    69.70
          744      696      744      720      744      720      744      744      720      744      720      744     8784
          744      696      744      720      744      720      744      744      720      744      720      744     8784

1981    6.924   11.359   14.280   20.514   21.476   27.232   27.811   26.409   23.761   19.232   15.636   10.073   18.752
        31.46    41.11    23.54    15.83    15.04     7.52    11.96     7.71    22.09    28.76    32.19    37.22    68.53
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1982    9.966   12.130   15.805   18.504   22.608   26.569   26.215   26.238   23.719   20.066   15.873   13.944   19.341
        60.25    26.69    35.24    17.40    16.91    10.80     7.79     8.82    19.79    29.22    27.36    38.45    55.83
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1983    8.498   10.740   12.478   16.307   22.146   24.155   27.788   27.354   23.714   20.464   15.340    9.974   18.291
        23.55    18.78    26.11    17.97    11.63     7.46    10.76    10.44    18.56    20.71    29.96    63.86    65.53
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1984    8.644   11.694   14.967   18.897   23.303   26.160   26.658   26.432   25.316   23.409   14.792   16.280   19.739
        27.14    28.38    30.45    17.64    16.81    14.39     7.76     8.30    12.99    16.12    33.99    26.26    56.52
          744      696      744      720      744      720      744      744      720      744      720      744     8784
          744      696      744      720      744      720      744      744      720      744      720      744     8784

1985    7.892   11.987   18.134   20.258   24.096   26.951   26.801   27.302   25.304   22.955   19.323   10.313   20.145
        48.79    41.59    16.94    19.38    11.21    12.44     7.46     8.07    13.67    14.24    19.78    49.71    64.39
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1986   10.615   14.087   15.582   19.146   23.582   27.500   28.636   26.877   26.303   20.985   19.161   11.463   20.350
        27.78    33.24    35.61    19.73    10.84     8.14    11.43    14.49     8.80    28.07    22.03    21.73    57.50
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1987    6.204                                                                                                        6.204
          .30                                                                                                          .30
            6                                                                                                            6
           74                                                                                                         8760

TOTAL  10.176   11.865   15.918   19.552   23.356   26.653   27.499   27.058   25.546   20.766   15.900   12.245   19.746
        45.75    36.49    27.91    19.72    13.66    11.21     9.57     9.05    14.16    24.98    34.35    41.87    61.34
        12648    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149016
        13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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MOBILE VARIABLE : AIR TEMPERATURE C DATES : 70/ 1/ 1: 6 TO 87/ 1/ 3: 4
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	7.245	10.164	14.700	21.554	23.452	26.015	27.434	27.459	26.724	20.902	12.900	13.672	19.408
	45.42	29.81	21.67	24.26	19.80	15.21	10.31	6.64	14.94	17.50	38.46	36.29	71.40
	738	672	744	720	744	720	744	744	720	744	720	744	8754
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1971	11.843	11.723	15.377	19.542	22.460	26.775	27.024	26.927	25.634	22.107	15.094	16.964	20.173
	48.29	51.77	35.06	34.75	20.89	14.53	9.33	9.24	8.39	22.36	35.50	31.59	57.62
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1972	14.333	12.457	16.499	20.578	23.210	26.320	26.461	27.519	26.687	21.083	13.672	12.761	20.155
	55.56	35.58	30.54	25.80	17.76	17.96	15.29	14.53	14.17	29.69	43.39	45.86	61.04
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1973	10.107	10.496	17.849	18.308	23.393	26.772	27.852	26.421	25.917	22.443	18.329	11.707	20.018
	39.14	41.74	20.43	25.02	20.21	14.69	10.18	11.46	10.27	28.67	36.35	52.19	64.56
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1974	17.133	12.878	17.646	18.986	23.887	25.320	27.055	26.602	23.917	18.241	15.090	12.632	19.997
	24.55	45.28	25.32	23.75	13.32	12.27	11.72	9.54	12.61	26.73	33.62	41.09	47.94
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1975	13.504	15.129	15.684	18.598	24.115	26.319	26.527	26.508	23.380	20.671	15.494	10.858	19.757
	38.89	37.61	41.66	28.52	13.68	10.42	9.67	10.17	24.93	21.77	54.13	41.30	56.36
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1976	9.253	14.657	17.624	20.447	22.127	25.934	27.497	26.298	23.552	16.149	9.999	8.959	18.547
	42.64	34.79	23.61	24.47	13.80	13.86	12.79	13.57	11.48	28.78	33.07	33.12	66.41
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1977	4.892	10.832	16.720	19.866	23.857	27.401	27.651	27.651	26.416	18.170	15.917	10.739	19.210
	40.59	40.16	32.41	24.16	16.76	14.60	10.55	6.18	9.15	28.80	24.03	44.59	78.40
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1978	5.285	7.001	13.515	20.061	23.854	26.913	27.556	27.747	27.267	20.650	18.517	12.053	19.258
	35.70	30.76	34.96	20.76	15.67	11.59	9.87	9.90	9.57	26.37	22.43	50.52	82.60
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760

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           MOBILE              VARIABLE : AIR TEMPERATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 3: 4
           MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

               JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

265 1979     8.062    9.011   14.809   20.531   22.230   25.720   26.249   26.603   24.309   19.720   14.985   10.075   18.572
             50.04    41.02    25.80    15.24    18.07    14.56     8.86    11.34    10.99    31.08    30.39    38.35    68.30
               744      672      744      720      744      720      744      744      720      744      720      744     8760
               744      672      744      720      744      720      744      744      720      744      720      744     8760

    1980    13.058    9.531   16.243   18.322   22.873   26.281   28.538   27.686   27.093   19.678   14.263   10.585   19.545
             28.45    51.56    42.18    24.03    14.99    15.91    16.37    12.76    14.29    31.07    38.20    42.05    70.98
               744      696      744      720      744      720      744      744      720      744      720      744     8784
               744      696      744      720      744      720      744      744      720      744      720      744     8784

    1981     6.931   11.195   14.754   21.189   21.659   27.464   28.011   27.170   24.553   20.580   17.029   10.432   19.277
             34.57    45.15    26.68    20.24    20.97    11.58    15.86    10.11    25.98    31.71    32.00    44.39    73.71
               744      672      744      720      744      720      744      744      720      744      720      744     8760
               744      672      744      720      744      720      744      744      720      744      720      744     8760

    1982     9.821   12.081   16.095   19.390   22.762   26.299   26.346   26.413   23.980   19.796   15.818   14.602   19.489
             69.61    36.47    45.93    21.18    21.09    14.25    10.39    11.42    23.07    35.07    37.65    42.98    61.47
               744      672      744      720      744      720      744      744      720      744      720      744     8760
               744      672      744      720      744      720      744      744      720      744      720      744     8760

    1983     7.718   10.759   12.106   15.855   21.820   23.927   26.875   26.356   23.084   19.460   14.863    ..643   17.743
             22.93    23.12    32.87    24.06    16.90    11.66    15.31    11.61    22.70    25.14    31.32    58.59    66.76
               744      672      744      720      744      720      744      744      720      744      720      744     8760
               744      672      744      720      744      720      744      744      720      744      720      744     8760

    1984     6.600   11.244   13.467   17.877   22.874   24.517   25.810   24.949   24.181   21.505   14.225   14.462   18.496
             38.64    34.46    41.20    25.50    18.35    25.68    12.33    10.00    16.10    21.14    41.57    35.43    63.89
               744      696      744      720      744      720      744      744      720      744      720      744     8784
               744      696      744      720      744      720      744      744      720      744      720      744     8784

    1985     6.392   10.121   17.168   19.355   22.710   25.849   25.433   26.459   24.273   21.467   18.529    9.398   18.968
             56.73    52.93    22.13    26.13    17.08    16.21    10.54    10.37    16.94    19.50    23.96    56.41    71.00
               744      672      744      720      744      720      744      744      720      744      720      744     8760
               744      672      744      720      744      720      744      744      720      744      720      744     8760

    1986     9.561   13.372   14.775   18.385   22.823   26.466   27.240   26.649   25.059   20.297   17.883   10.895   19.472
             34.24    39.65    44.04    26.34    16.79    12.49    13.25    14.90    12.99    32.45    28.13    23.36    61.51
               744      672      744      720      744      720      744      744      720      744      720      744     8760
               744      672      744      720      744      720      744      744      720      744      720      744     8760

    1987     6.184                                                                                                     6.184
              7.75                                                                                                      7.75
                53                                                                                                        53
               744                                                                                                      8760

    TOTAL    9.501   11.338   15.590   19.344   22.948   26.135   27.033   26.789   25.060   20.172   15.447   11.790   19.294
             52.53    43.32    34.61    26.18    17.92    15.33    12.53    11.26    17.01    29.22    38.97    46.57    66.57
             12695    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149063
             13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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BOOTHVILLE        VARIABLE : AIR TEMPERATURE  C    DATES : 71/ 5/ 1: 6 TO 86/ 1/ 1: 3
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN     FED     MAR     APR     MAY     JUN     JLY     AUG     SEP     OCT     NOV     DEC   ANNUAL

1971                                    23.702  27.057  27.499  27.576  26.461  23.698  18.185  18.678  24.110
                                          7.96    6.12    4.59    3.74    2.98    8.47   15.92   14.75   20.86
                                           738     720     744     744     720     744     720     744    5874
                                           744     720     744     744     720     744     720     744    8760

1972    16.036  14.293  17.927  21.479  24.087  27.182  27.584  28.516  27.845  23.572  16.086  14.107  21.583
         31.76   20.56   17.23   10.97    6.76    6.94    5.30    5.52    4.29   10.44   34.61   26.74   43.99
           7'4     696     744     720     744     720     744      74    720      744     720     744    8784
           744     696     744     720     744     720     744     744     720     744     720     744    8784

1973    11.318  11.961  18.185  19.032  23.772  27.735  29.007  27.569  26.705  23.821  20.523  13.436  21.138
         25.89   23.19   10.13   12.23    7.21    4.65    3.85    3.64    3.92   11.86   12.99   34.40   49.70
           744     672     744     720     744     720     744     744     720     744     720     744    8760
           744     672     744     720     744     720     744     744     720     744     720     744    8760

1974    17.280  14.311  19.196  20.423  24.762  26.790  27.652  27.564  26.393  21.604  17.743  14.285  21.519
         12.94   27.94   11.30   12.03    4.98    4.64    4.31    3.82    4.15    5.76   16.66   27.08   34.32
           744     672     744     720     744     720     744     744     673     744     720     744    8713
           744     672     744     720     744     720     744     744     720     744     720     744    8760

1975    14.642  15.965  17.301  19.358  24.484  27.238  27.269  27.322  24.863  21.963  17.863  12.776  20.946
         25.85   23.13   20.18   15.79    4.89    3.09    3.21    4.54   11.21    6.37   33.37   26.88   40.36
           744     672     744     720     744     720     744     744     720     744     720     744    8760
           744     672     744     720     744     720     744     744     720     744     720     744    8760

1976    10.938  15.335  18.850  20.941  22.808  26.105  27.493  27.444  25.773  19.278                  21.517
         23.21   19.08   11.81    9.24    5.36    4.85    4.14    3.16    4.57   13.41                   37.40
           744     696     744     720     744     720     744     744     720     721                    7297
           744     696     744     720     744     720     744     744     720     744                    8784

1977                                                                                           13.349  13.349
                                                                                                25.07   25.07
                                                                                                  720     720
                                                                                                  744    8760

1978     7.867   8.978  14.722  20.072                                                                 12.891
         25.19   16.72   17.17    7.91                                                                  40.52
           744     672     744     697                                                                   2057
           744     672     744     720                                                                   8760

1979     9.031  11.318  16.017  20.833  23.166  26.550  28.094  27.772  25.977  22.200  15.861  12.282  19.970
         29.99   25.17   13.97    6.41    5.47    4.08    3.65    3.75    4.77   11.36   19.46   18.85   54.37
           744     672     744     720     744     720     744     744     720     744     720     744    8760
           744     672     744     720     744     720     744     744     720     744     720     744    8760
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BOOTHVILLE        VARIABLE : AIR TEMPERATURE  C    DATES : 71/ 5/ 1: 6 TO 86/ 1/ 1: 3
 MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR       APR      MAY       JUN      JLY       AUG       SEP      OCT       NOV       DEC      ANNUAL


1980     13.644   11.485   16.717    19.049   23.941    25.573                                                                17.247
          16.85    33.19    26.38     10.77     5.93      5.00                                                                 38.24
            744      696      744       720      744        97                                                                  3745
            744      696      744       720      744       720                                                                  8784

1981                                                                       28.146    25.729   22.513    18.602    13.185    21.585
                                                                             4.92     10.46    17.56     18.29     25.14     43.55
                                                                              720       720      744       720       744      3648
                                                                              744       720      744       720       744      8760

1982     12.852   12.704   17.668    20.262   23.919    28.022   27.822    27.798    25.790   22.857    18.576    16.141    21.250
          48.42    18.02    26.23     11.85    12.07      7.27     6.25      6.44     11.16    14.47     15.07     22.93     45.87
            744      672      744       720      744       720      744       744       720      744       720       744      8760
            744      672      744       720      744       720      744       744       720      744       720       744      8760

1983     11.806                                                                                                             11.806
           1.11                                                                                                               1.11
              4                                                                                                                  4
            744                                                                                                               8760

1984      9.351   12.954   15.326    19.602   23.654    25.874   27.001    26.902    25.971   24.276    16.930    16.814    20.423
          16.92    25.52    20.03     15.45     8.49     10.84     6.07      6.58      5.97     8.43     21.59     23.24     47.41
            734      696      744       720      744       720      744       744       720      744       720       744      8774
            744      696      744       720      744       720      744       744       720      744       720       744      8784

1985      8.834   12.016   18.113    20.569   23.867    25.567   25.633    26.305    25.261   23.347    19.094    10.940    20.006
          35.21    30.18    12.75     16.54    13.49     13.14    13.46     15.12     11.54    11.07     19.77     34.38     54.70
            738      672      744       720      744       720      744       744       720      744       720       744      8754
            744      672      744       720      744       720      744       744       720      744       720       744      8760

1986     17.083                                                                                                             17.083
            .90                                                                                                                .90
              4                                                                                                                  4
            744                                                                                                               8760

TOTAL    11.989   12.856   17.275    20.148   23.833    26.796   27.505    27.536    26.068   22.658    17.946    14.184    20.694
          35.53    27.55    18.77     12.34     7.77      7.11     6.13      5.87      7.40    12.57     22.52     29.87     47.12
           8176     7488     8184      7897     8178      7297     7440      8160      7873     8161      7200      8160     94214
          11160     9504    10416     10080    11160     10800    11160     11160     10800    11160     10800     11160    140256
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PORT ARTHUR VARIABLE : AIR TEMPERATURE C DATES : 70/ 1/ 1:10 TO 87/ 1/ 1: 5
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1970	8.349	12.108	15.160	21.620	23.377	26.815	28.318	28.071	27.170	20.783	14.944	16.549	20.395
	41.10	25.12	23.05	22.98	18.89	16.18	13.50	12.23	14.11	25.68	35.70	30.20	66.17
	734	672	744	720	744	720	744	744	720	744	720	744	8750
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1971	13.785	13.597	15.963	20.329	23.642	27.040	26.614	25.805	24.822	21.713	15.044	15.056	20.322
	50.46	38.45	29.50	24.84	12.40	10.70	10.31	10.78	10.04	16.15	33.18	26.07	48.37
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1972	12.679	12.585	17.115	20.998	22.752	26.415	25.877	26.274	25.902	20.308	12.389	11.036	19.544
	54.55	41.63	25.70	19.89	15.80	13.21	8.12	10.56	9.14	29.95	39.74	39.02	59.70
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1973	8.343	10.148	17.358	17.553	22.484	25.919	27.070	25.882	25.407	21.971	19.081	11.405	19.432
	43.04	34.32	15.15	28.53	17.59	9.03	9.05	8.83	7.54	23.72	32.50	44.28	62.13
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1974	13.267	13.011	18.499	20.092	24.219	25.687	26.473	26.266	23.278	19.630	14.901	11.080	19.741
	41.02	39.82	28.03	20.20	11.78	15.13	12.43	11.35	18.61	21.92	38.29	38.01	53.16
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1975	13.151	13.141	15.835	19.130	23.881	26.096	26.620	26.302	23.445	20.549	15.384	10.853	19.566
	38.71	37.66	36.57	23.92	10.28	10.39	10.55	9.37	20.54	21.76	49.56	40.78	55.94
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1976	9.698	14.897	17.056	20.078	21.841	25.328	26.330	26.527	25.082	16.198	11.022	10.149	18.686
	45.45	33.16	22.11	16.54	17.28	13.90	9.50	15.03	15.56	32.80	42.13	26.66	61.97
	744	696	744	720	744	720	744	744	720	744	720	744	8784
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1977	6.488	12.586	17.089	19.925	24.623	27.990	28.495	28.457	27.417	21.506	17.515	12.899	20.451
	29.43	32.66	25.03	18.36	11.74	11.62	10.41	6.60	10.40	25.38	25.80	39.28	69.49
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1978	6.420	7.841	[illegible]	21.052	25.676	28.142	28.695	28.837	27.038	21.464	19.135	13.701	20.317
	38.50	30.58	33.31	17.57	18.33	10.07	9.35	9.95	9.95	26.30	28.61	0.20	81.56
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760

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      PORT ARTHUR       VARIABLE : AIR TEMPERATURE  C    DATES : 70/ 1/ 1:10 TO 87/ 1/ 1: 5
      MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1979      7.560   10.897   16.931   20.706   22.808   26.587   27.372   26.955   24.419   21.326   13.295   11.114   19.210
          40.99    42.19    20.66    12.57    15.05    10.40     6.29     6.84    13.18    29.13    38.61    35.67    67.32
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1980     12.596   10.549   16.416   18.930   24.454   28.192   29.133   28.622   27.732   19.441   13.954   12.262   20.221
          22.79    50.18    33.08    27.08    13.20    14.82    13.73    11.04     9.93    36.31    40.52    36.29    72.01
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

1981      9.819   11.954   16.019   22.255   23.206   27.375   27.893   27.605   24.116   21.141   17.051   12.933   20.153
          25.09    44.34    20.09    12.23    16.02     9.10    11.45    10.97    21.73    34.83    26.53    34.90    59.64
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1982     11.871   11.188   17.767   19.847   23.948   27.110   27.602   27.703   25.336   20.765   16.633   14.207   20.386
          67.65    38.59    34.43    24.05    15.04     9.96     9.86     9.62    20.39    35.20    32.19    39.22    61.40
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1983     10.061   12.073   14.806   17.681   22.755   25.767   27.633   27.274   24.360   21.107   17.357    9.164   19.205
          24.72    19.52    24.82    20.71    12.89     7.72     8.08     7.30    16.25    23.78    34.35    73.25    63.16
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1984      8.923   13.054   16.582   20.315   23.716   26.363   26.968   26.996   24.886   23.443   16.113   17.459   20.425
          27.97    33.16    24.06    22.09    15.53    14.86     8.97     9.56    14.13    17.55    39.41    31.45    53.99
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

1985      8.592   10.985   18.937   21.943   24.232   26.789   26.878   27.650   25.393   21.733   18.837   10.473   20.246
          34.34    41.67    16.88    19.15    14.80    13.02    14.17    12.48    16.32    22.23    25.83    41.72    64.98
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1986     11.533   14.869   16.532   21.044   23.663   26.949   28.525   27.070   26.941   20.294   17.379   10.633   20.470
          32.45    38.28    32.04    17.00    13.52     8.60    10.72    13.32     7.98    29.89    31.90    17.13    57.47
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1987      5.370                                                                                                     5.370
           5.14                                                                                                      5.14
              6                                                                                                         6
            744                                                                                                      8760

TOTAL    10.184   12.093   16.653   20.206   23.605   26.739   27.441   27.241   25.456   20.787   15.884   12.410   19.927
          44.19    39.40    27.33    22.07    15.50    12.36    11.22    11.30    15.65    28.73    40.10    42.92    62.55
          12644    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149012
          13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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              CORPUS CHRISTI    VARIABLE : AIR TEMPERATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
              MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

                JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

     1970    10.302   14.751   16.051   22.451   23.645   26.404   27.774   28.442   26.780   22.230   17.055   18.924   21.274
              33.54    21.61    27.46    25.18    19.76    11.52    10.27    10.13    16.18    26.56    39.00    27.66    53.33
                738      672      744      720      744      720      744      744      720      744      720      744     8754
                744      672      744      720      744      720      744      744      720      744      720      744     8760

     1971    16.294   16.658   20.239   21.471   25.257   27.818   28.917   27.623   26.771   24.420   19.502   17.688   22.759
              49.31    41.87    36.28    23.26    13.07     8.06    14.27     9.42    13.35    12.37    27.01    29.46    42.58
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

     1972    15.870   15.679   20.732   24.436   24.748   27.306   28.253   28.392   28.118   24.357   15.780   12.936   22.235
              52.31    36.58    18.43    16.88     9.49    10.89     9.63    10.40     9.66    21.67    39.42    48.16    53.88
                744      696      744      720      744      720      744      744      720      744      720      744     8784
                744      696      744      720      744      720      744      744      720      744      720      744     8784

     1973    10.509   12.897   20.356   20.632   24.912   27.052   28.839   27.540   26.930   24.158   22.505   15.442   21.862
              45.53    36.91    17.93    22.60    19.09     7.32    10.30     7.50     7.70    15.29    24.66    42.85    54.79
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

     1974    13.825   16.344   20.861   22.770   26.721   26.908   28.433   29.009   25.588   23.041   17.654   13.917   22.124
              47.59    42.63    28.73    18.34    10.36    12.88    13.51    10.71    16.15    18.66    33.03    33.69    51.80
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

     1975    14.845   15.641   19.581   23.262   26.527   28.245   28.631   27.905   25.617   23.095   19.116   14.212   22.258
              47.31    35.48    34.87    19.49     8.88    11.44    11.35     8.08    14.80    21.43    38.21    42.71    51.09
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

     1976    13.611   17.856   20.289   22.778   23.457   27.334   27.195   27.876   27.061   19.515   13.807   12.575   21.113
              40.84    37.28    22.10    12.71    14.59    10.09     7.70    12.05    10.48    28.51    39.64    21.73    51.61
                744      696      744      720      744      720      744      744      720      744      720      744     8784
                744      696      744      720      744      720      744      744      720      744      720      744     8784

     1977     9.978   14.395   18.922   21.708   25.653   27.832   28.864   29.931   29.286   24.232   19.590   16.265   22.260
              28.18    27.09    23.26    18.54     6.86     9.07    10.51     9.86    11.65    20.62    28.11    37.60    58.00
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

     1978     9.596   10.787   17.508   22.051   26.732   28.390   29.458   28.822   27.170   22.638   19.964   14.939   21.561
              43.19    36.02    35.23    18.42    11.95     8.91    11.05     9.26     8.02    19.69    30.14    43.27    67.84
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760
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          CORPUS CHRISTI    VARIABLE : AIR TEMPERATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
          MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

271 79   10.588   13.279   19.610   23.226   24.533   27.334   29.159   28.817   25.516   24.069   17.205   14.476   21.532
          43.16    44.22    22.23    12.45    17.17    13.09     8.65    10.19    11.91    24.51    37.44    38.46    60.03
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

  1980   15.280   13.904   19.219   20.699   25.031   28.506   29.418   28.091   27.679   21.653   15.123   14.002   21.577
          31.13    50.14    36.82    26.40    10.15    11.86    13.21     8.10     9.89    31.28    38.76    33.24    58.58
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

  1981   12.426   14.478   17.439   23.147   24.759   27.793   28.402   28.425   26.815   23.588   19.624   15.134   21.869
          24.01    37.40    21.34     9.49    12.19     6.57     9.95    11.26    16.98    35.29    23.40    34.69    51.08
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

  1982   13.822   13.073   18.802   21.126   24.530   27.706   28.860   28.924   27.506   22.819   17.822   14.496   21.673
          65.10    45.28    32.37    24.16     9.55    11.58    13.55    13.12    16.95    26.59    39.88    36.62    60.45
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

  1983   12.372   14.250   17.419   20.284   24.135   27.032   27.992   28.663   25.934   22.999   19.914    9.633   20.913
          31.71    22.88    22.51    27.88    11.04    13.98     9.37    11.42    15.65    18.08    29.25    86.92    62.41
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

  1984   10.367   14.785   18.737   22.505   24.806   27.187   28.155   28.306   25.479   24.237   18.188   18.504   21.792
          30.52    32.72    29.35    25.76    16.44    13.63    13.19    13.01    13.94    14.90    35.14    32.14    52.05
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

  1985    9.269   11.930   19.321   21.959   25.063   26.520   27.298   28.601   26.768   23.532   20.257   12.711   21.147
          42.99    51.14    15.63    15.80    11.84     9.21    13.33    14.27    13.84    17.82    25.96    37.33    61.88
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

  1986   13.517   16.011   18.857   23.253   24.682   27.265   28.451   28.123   27.982   22.590   17.698   12.916   21.801
          33.05    43.14    25.96    10.55    10.22     8.81    14.24    11.70     8.70    25.81    41.24    22.34    52.06
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

  1987   10.000                                                                                                    10.000
           2.72                                                                                                      2.72
              6                                                                                                         6
            744                                                                                                      8760

 TOTAL   12.498   14.521   19.056   22.221   25.011   27.449   28.476   28.441   26.882   23.128   18.283   14.634   21.749
          45.61    40.77    28.13    20.46    13.34    10.86    11.81    10.92    13.72    23.72    37.79    43.20    55.71
          12648    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149016
          13392    11520    12648    12240    12648    12240    12448    12648    12240    12648    12240    12648   157776
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            BROWNSVILLE       VARIABLE : AIR TEMPRATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
            MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

              JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1970       13.830   17.355   18.810   23.921   24.297   27.372   28.322   29.138   27.407   23.672   18.626   20.581   22.812
            30.27    21.58    26.60    18.57    18.35     9.94    12.00    11.43    17.77    20.75    34.87    24.60    42.62
              738      672      744      720      744      720      744      744      720      744      720      744     8754
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1971       18.286   19.525   22.100   23.106   25.564   27.522   27.809   27.535   26.762   24.639   20.726   19.146   23.583
            50.43    32.18    28.40    16.95    11.36     7.19     9.67    10.69    12.28    10.35    20.10    25.30    31.08
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1972       18.323   17.598   22.194   24.840   25.164   26.704   27.151   27.523   27.428   24.963   17.463   15.327   22.905
            39.74    29.95    13.08    13.06     7.39     8.06     7.36    10.07     8.87    14.39    36.78    43.86    37.97
              744      696      744      720      744      720      744      744      720      744      720      744     8784
              744      696      744      720      744      720      744      744      720      744      720      744     8784

1973       12.372   14.692   21.122   21.866   24.945   26.783   28.127   26.658   26.905   24.274   23.390   17.384   22.414
            47.71    32.54    11.60    20.11    15.03     7.12     8.91     8.62     9.53    13.42    20.70    34.86    43.00
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1974       15.865   17.685   22.047   23.650   26.884   26.674   27.246   28.777   26.410   22.785   19.099   15.976   22.787
            42.77    30.22    26.02    16.84     9.40    12.00    10.60    11.28    13.75    16.79    30.68    30.62    40.56
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1975       16.229   17.751   21.275   24.083   27.037   27.741   27.621   27.486   25.363   23.598   19.921   15.933   22.863
            39.45    28.81    26.02    16.27     8.41     9.98    10.55     9.66    13.81    18.51    33.03    38.75    39.65
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1976       14.913   18.400   21.436   22.962   24.023   27.100   26.851   27.175   27.012   21.062   15.684   13.970   21.718
            32.00    30.18    16.69    10.08    12.14    10.58     6.89     9.00     8.64    23.02    37.58    25.44    41.37
              744      696      744      720      744      720      744      744      720      744      720      744     8784
              744      696      744      720      744      720      744      744      720      744      720      744     8784

1977       12.431   16.424   20.360   22.714   26.236   27.704   28.868   29.291   28.527   24.611   20.797   17.697   23.004
            33.63    26.09    22.88    17.82     7.49     9.72    12.06    12.35    13.17    22.65    28.11    37.82    48.20
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1978       12.389   12.846   18.941   23.152   27.721   29.020   29.910   29.047   27.403   23.744   21.365   16.841   22.751
            43.02    38.39    31.47    17.48    12.01    13.00    13.09    13.84     9.81    17.66    28.50    42.54    59.25
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      772      744      720      744      720      744      744      720      744      720      744     8760
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         BROWNSVILLE       VARIABLE : AIR TEMPRATURE  C    DATES : 70/ 1/ 1: 6 TO 87/ 1/ 1: 5
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

 1979    13.257   14.947   20.284   24.020   24.830   27.654   29.172   28.401   24.958   24.474   18.614   15.354   22.205
          43.46    43.42    21.66    12.51    17.70    14.92    10.63    12.93    13.87    24.70    34.27    35.05    51.57
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1980    17.206   15.570   20.379   22.087   27.248   30.130   30.343   28.745   28.787   23.849   16.538   16.036   23.104
          28.75    40.12    31.64    25.03    11.51    12.37    13.80     9.18    1..27    30.53    38.26    37.87    55.44
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

 1981    14.454   16.719   19.604   24.330   26.390   28.571   29.077   29.149   27.504   25.097   21.162   18.734   23.433
          27.78    28.40    20.55    10.62    13.42     8.22    11.78    13.49    16.11    35.30    30.06    36.38    44.88
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1982    16.210   16.448   20.184   23.840   25.936   29.217   29.930   29.721   28.052   24.547   20.046   17.398   23.499
          62.99    48.74    45.13    25.39     8.89    10.49    12.45    12.52    16.70    25.79    43.98    31.62    53.78
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1983    14.901   16.823   19.696   22.083   25.970   28.074   28.584   29.126   26.667   23.863   21.842   13.055   22.581
          27.38    23.75    25.03    28.47    11.48    13.58     9.49    12.02    15.88    22.06    29.72    95.78    53.96
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1984    12.888   16.490   20.508   24.000   26.004   27.833   28.396   28.570   25.742   25.681   20.411   20.739   23.126
          36.94    34.09    28.41    26.61    15.00    12.40    13.82    13.89    13.37    13.31    29.44    29.02    44.71
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

 1985    12.053   14.670   21.480   23.887   26.674   27.721   27.717   28.860   27.339   24.298   22.209   15.318   22.723
          55.51    52.22    18.44    18.17    14.05    10.17    10.70    12.04    12.15    17.16    25.72    36.22    53.58
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1986    15.231   18.129   20.158   24.394   25.776   27.893   28.657   28.575   28.414   23.919   18.781   15.214   22.947
          36.27    38.35    24.45    11.19    11.11     8.40    12.36    12.12     9.94    27.01    47.20    24.01    46.59
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1987    10.926                                                                                                      10.926
           4.77                                                                                                        4.77
              6                                                                                                           6
            744                                                                                                        8760

 TOTAL   14.754   16.596   20.622   23.467   25.924   27.865   28.458   28.457   27.099   24.063   19.804   16.747   22.850
          43.81    36.56    25.59    18.66    13.04    11.28    11.91    12.17    13.88    21.75    36.18    41.32    46.57
          12648    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   149016
          13392    11520    12648    12240    12648    12240    12648    12648    12240    12648    12240    12648   157776
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C.2 NATIONAL DATA BUOY CENTER (NDBC) BUOYS AND PLATFORMS

C.2.1 ATMOSPHERIC PRESSURE (mb - 1000.0)

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42001 VARIABLE : PRESSURE MB-1000 DATES : 76/12/ 6: 1 TO 86/ 9/30:21
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1976												17.783 19.35 623 744	17.783 19.35 623 8784
1977	18.357 24.91 744 744	19.095 16.71 672 672	14.989 26.98 493 744		15.007 5.95 312 744	17.252 5.70 720 720	18.750 1.84 744 744	16.380 6.29 744 744	15.530 7.06 537 720	16.852 9.01 744 744	16.299 17.66 720 720	17.474 20.76 688 744	17.105 14.64 7118 8760
1978				15.422 13.71 699 720	13.452 17.95 744 744	16.669 4.01 720 720	16.766 3.63 744 744	16.725 3.52 744 744	14.743 2.77 720 720	16.598 6.71 744 744	17.860 6.80 720 720	17.616 24.22 744 744	16.209 11.06 6579 8760
1979	17.997 59.45 744 744	19.561 17.36 672 672	18.236 18.10 744 744	14.206 13.71 720 720	14.315 6.88 744 744	16.893 6.87 720 720	15.976 11.47 744 744	14.585 7.68 399 744	10.124 6.02 604 720			18.841 18.50 647 744	16.200 24.22 6738 8760
1980	16.564 13.04 416 744	20.269 13.33 286 696		15.219 16.48 646 720	12.923 4.99 744 744	16.599 2.18 720 720	15.966 3.72 744 744	15.408 9.11 744 744	15.355 2.89 720 720	16.659 6.33 744 744	18.050 18.03 720 720	21.436 7.70 744 744	16.577 13.37 7228 8784
1981	20.987 19.78 744 744	20.805 30.55 672 672	16.692 24.02 744 744	19.326 13.12 720 720	11.611 4.27 206 744	14.990 3.79 720 720	16.913 2.71 744 744	15.085 5.49 744 744	14.501 2.10 368 720	17.051 7.38 744 744	18.379 3.75 720 720	18.799 20.30 744 744	17.556 17.41 7870 8760
1982	19.393 14.17 744 744	18.614 11.43 672 672	16.270 22.15 744 744	15.215 8.45 720 720	14.670 7.45 744 744	14.475 6.02 720 720	17.529 2.25 744 744	17.244 3.24 744 744	14.690 3.46 720 720	16.275 12.38 744 744	18.208 11.14 720 720	18.117 12.10 744 744	16.721 12.15 8760 8760
1983	18.217 26.32 662 744	13.232 24.17 672 672	11.906 44.86 744 744	13.242 15.15 720 720	14.156 5.20 744 744	13.465 3.52 720 720	17.529 2.21 744 744	16.919 3.34 744 744	16.324 5.59 720 720	18.382 8.86 415 744	15.875 13.11 720 720	17.921 16.28 581 744	15.444 18.67 8186 8760
1984	20.693 21.47 744 744	17.177 25.97 696 696	17.578 21.43 318 744	17.152 2.06 29 720	15.820 10.46 744 744	16.668 2.04 720 720	16.481 2.62 516 744	16.927 4.11 739 744	14.775 9.63 241 720	17.816 6.40 744 744	19.513 15.16 720 720	20.946 13.29 744 744	17.925 15.20 6955 8784

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42001             VARIABLE : PRESSURE MB-1000     DATED : 76/12/ 6: 1 TO 86/ 9/30:21
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1985                                                        16.455   15.053   15.020   12.524   15.891   20.850   15.727
                                                              4.10     5.15     4.41    47.12    21.49    18.58    22.37
                                                               700      744      720      744      720      540     4168
                                                               744      744      720      744      720      744     8760

1986  19.905   15.378   18.183   16.268   13.822   14.976   18.645   15.780   16.609                              16.640
        9.22    20.86    46.36     7.91     5.01     7.73     3.91     2.46     2.90                               15.18
         744      672      744      720      744      720      744      744      718                                6550
         744      672      744      720      744      720      744      744      720                                8760

TOTAL 19.171   17.839   16.212   15.572   14.119   15.776   17.125   16.079   14.847   16.411   17.510   18.983   16.654
       25.82    26.49    34.62    15.73     8.94     6.20     4.80     5.65     7.27    15.89    14.93    19.08    16.69
        5542     5014     4531     4974     5726     6480     7168     7090     6068     5623     5760     6799    70775
        7440     6768     7440     7200     7440     7200     7440     7440     7200     6696     6480     7440    96432
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42662              VARIABLE : PRESSURE MB-1000       DATES : 76/ 9/19: 0 TO 86/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1976                                                                              12.425   16.559   19.504   18.589   17.537
                                                                                    4.07    10.91    23.19    20.57    21.27
                                                                                     288      744      720      744     2496
                                                                                     720      744      720      744     8784

1977    18.605   19.278   13.899   17.619   14.107   15.237   16.896   14.365   13.333   16.468   15.904   14.905   15.922
         28.90    20.96    33.49    41.01     6.81     4.14     1.89     5.58    12.36    10.80    28.08    20.65    21.10
           744      672      744      720      744      720      744      744      720      744      720      217     8233
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1978    19.456   17.965   17.472   13.999   11.384   15.693   15.580   15.214   14.133   17.303   17.093   17.806   15.921
         30.03    32.08    37.20    14.46    22.48     5.78     3.03     8.22     4.69     8.24    10.64    36.10    22.04
           243      672      744      720      744      720      559      364      720      744      720      744     7694
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1979    19.168   19.756   17.912   13.123   13.816   16.846   14.530   15.178   10.608   14.076   17.886   19.816   16.045
         64.51    25.96    21.87    17.48    13.59     8.85    13.17     8.74     9.21     9.48    29.67    26.74    28.61
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1980    16.374   18.341   13.785   14.002   11.397   15.561   15.155   15.567   13.968   16.184   17.404   21.325   15.756
         12.49    22.87    28.43    25.80     7.79     1.83     5.19     6.24     3.48    11.17    27.14    13.03    20.35
           744      696      744      720      744      720      744      294      720      744      720      744     8334
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1981    22.072   21.725   17.154   19.076   13.532   14.421   17.042   15.336   16.140   16.391   17.353   17.036   17.358
         24.51    41.82    26.56    16.90     5.15     8.01     3.26     6.02     6.21     8.81     9.08    25.98    21.17
           744      672      744      720      478      720      744      744      720      744      720      744     8494
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1982    17.781   18.228   14.997   13.815   13.535   13.565   16.906   16.622   12.751   16.046   17.812   17.392   15.944
         20.98    16.56    29.35    12.96     8.93     4.22     2.04     1.15     1.09    18.16    15.65    24.24    17.99
           744      672      744      720      744      720      744      159      150      744      720      744     7605
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1983    18.309   13.678   11.665   12.918   13.339   13.370   17.556   17.018   16.354   18.051   15.877   18.228   15.503
         31.84    26.74    40.22    24.83     5.46     3.60     3.13     4.72     7.47    10.11    19.24    21.75    21.68
           744      672      744      720      744      720      744      744      720      744      720      576     8592
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1984    21.828   18.044   16.303   12.470   15.444   16.695   16.002   16.257   14.339   16.059   18.931   19.223   16.806
         23.39    29.22    38.14    14.19    18.91     3.14     3.14     3.48    11.28    13.12    23.37    23.29    22.48
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784
         42002              VARIABLE : PRESSURE MB-1000      DATES : 76/ 9/19: 0 TO 86/12/31:23
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

 1985    19.876   20.126   17.771   16.960   13.503   14.321   17.361   15.103   14.741   13.183   15.894   20.651   16.567
          24.59    20.36    18.94    17.27     4.80     3.67     8.05     3.35     4.38    32.61    20.31    20.98    21.78
            744      672      744      720      744      720      288      744      720      744      720      744     8304
            744      672      744      720      744      720      744      744      720      744      720      744     8760

 1986    20.747   15.219   18.129   15.139   13.148   14.585   18.250   15.532                     15.845   18.243   16.538
          11.44    24.01    60.80    10.16     5.76     7.78     3.71     1.71                      11.35    18.92    20.54
            744      672      744      652      744      720      744      694                        627      744     7085
            744      672      744      720      744      720      744      744                        720      744     8760

 1987



 TOTAL   19.419   18.236   15.909   14.910   13.313   15.029   16.498   15.552   14.084   16.032   17.244   18.731   16.277
          30.11    30.91    37.85    24.10    11.48     6.38     5.75     5.59     9.86    15.15    21.33    25.28    22.18
           6939     6768     7440     7132     7174     7200     6799     5975     6198     7440     7827     7489    84381
           8184     6768     7440     7200     7440     7200     7440     7440     7920     8184     7920     8184   105192
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42003 VARIABLE : PRESSURE MB-1000 DATES : 77/ 7/ 7: 0 TO 86/12/31:19
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1977							17.906 1.91 600 744	16.554 2.53 744 744	15.236 4.47 720 720	16.581 4.63 744 744	16.807 16.33 720 720	17.969 20.82 744 744	16.815 9.48 4272 8760
1978	19.904 28.86 744 744	17.691 18.16 670 672		16.035 14.22 720 720	14.250 12.57 744 744	16.966 2.37 720 720	17.584 3.94 744 744	17.637 2.12 744 744	15.644 2.29 720 720	16.111 5.15 744 744	18.471 4.36 720 720	18.598 17.66 744 744	17.172 12.44 8014 8760
1979	18.309 55.79 744 744	20.094 13.76 672 672	19.027 18.52 744 744	15.864 11.38 720 720	15.324 4.47 744 744	17.228 7.50 720 720	17.454 5.55 744 744	18.565 2.11 319 744					17.647 18.24 5407 8760
1980	17.465 12.27 462 744	19.404 15.51 691 696	16.714 17.13 742 744	15.719 9.16 711 720	14.493 4.37 744 744	17.706 2.36 719 720	17.625 1.31 93 744		15.118 3.22 442 720	15.560 4.82 744 744	16.734 15.06 720 720	19.976 9.63 744 744	16.945 12.33 6812 8784
1981	19.969 17.00 744 744	20.001 25.46 672 672	16.066 24.16 744 744	19.346 11.20 720 720	13.688 5.38 744 744	15.581 2.40 720 720	17.041 2.78 744 744	15.096 6.58 744 744	15.356 3.56 720 720	16.515 5.24 744 744	17.448 3.29 720 720	18.262 14.50 744 744	17.008 13.81 8760 8760
1982	19.321 13.59 744 744	18.730 9.90 672 672	17.047 17.32 744 744	16.191 6.97 720 720	15.512 5.70 744 744	15.075 8.48 720 720	17.925 1.52 469 744	16.749 4.35 390 744	13.963 3.93 720 720	15.644 12.48 744 744	18.157 7.88 720 720	18.614 7.71 744 744	16.880 11.42 8131 8760
1983	17.629 17.71 744 744	13.450 20.47 672 672	11.864 47.60 744 744	13.933 11.40 720 720	15.315 6.85 744 744	14.078 3.88 720 720	17.660 1.96 744 744	17.090 3.24 744 744	16.618 4.09 720 720	16.757 8.10 744 744	16.110 11.13 720 720	18.016 13.42 581 744	15.691 15.97 8597 8760
1984			11.580 28.68 241 744	13.755 10.60 720 720	16.126 6.71 744 744	16.509 2.37 720 720	16.576 2.56 744 744	16.727 3.90 744 744	14.724 6.70 720 720	17.605 3.68 744 744	18.333 12.28 720 720	21.085 9.12 744 744	16.656 11.93 6041 8784
1985	19.545 13.02 744 744	19.906 10.47 672 672	18.365 14.05 744 744	16.910 6.44 720 720	14.327 4.26 744 744	16.175 2.02 720 720	17.110 6.07 744 744	15.759 1.36 581 744	15.304 3.32 412 720	14.258 27.69 744 744	16.329 41.20 720 720	20.976 14.12 744 744	17.158 17.01 8289 8760

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42003              VARIABLE : PRESSURE MB-1000      DATES : 77/ 7/ 7: 0 TO 86/12/31:19
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL


1986    20.636   17.027   19.165   17.064   14.445   15.392   18.761   16.102   17.276   17.226   16.952   18.181   17.362
         10.14    17.37    29.60     7.16     4.42     7.78     4.89     3.26     3.08     3.04     8.74     5.34    12.14
           744      672      744      720      744      720      744      744      720      744      720      740     8756
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   19.179   18.302   16.657   16.091   14.831   16.079   17.535   16.583   15.497   16.251   17.260   19.102   16.914
         22.56    20.83    30.60    12.33     6.61     5.53     3.91     4.12     4.83     9.20    14.04    15.00    13.83
          5670     5393     5447     6471     6696     6479     6370     5754     5894     6696     6480     6529    73879
          6696     6096     6696     6480     6696     6480     7440     7440     7200     7440     7200     7440    87648
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         42008             VARIABLE : SST DEG C            DATES : 80/10/ 1: 0 TO 84/ 7/29: 0
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1980                                                                                     25.700   19.316   15.242   20.094
                                                                                           3.72     4.95      .96    21.91
                                                                                            744      720      744     2208
                                                                                            744      720      744     8784

1981   12.666   12.118   15.682   21.361   24.822   28.245   29.875   30.542   28.522   26.295   20.931   18.848   22.663
         1.03     1.34      .91     4.20      .50     1.25      .48       .1     2.09     4.19      .87     1.07    41.63
          744      672      744      720      744      720      744      744      720      744      720      489     8505
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1982   12.746   12.962   17.008   19.653   24.315   27.798   28.876   29.533   30.212                              21.915
         1.12     1.52     4.74     2.93     3.20      .46      .30      .26      .02                               43.67
          629      672      744      657      744      720      744      744        6                                5660
          744      672      744      720      744      720      744      744      720                                8760

1983



1984    9.214   13.190   16.192   20.157   23.485   26.278   28.021                                                19.412
        14.84    11.42     6.27     4.84     3.15     2.35      .42                                                 47.61
          743      696      744      720      744      720      673                                                  5040
          744      696      744      720      744      720      744                                                  8784

TOTAL  11.478   12.762   16.294   20.412   24.207   27.448   28.954   30.037   28.536   25.997   20.123   16.672   21.435
         8.67     5.04     4.27     4.53     2.59     2.06      .96      .46     2.10     4.04     3.56     4.12    43.35
         2116     2040     2232     2097     2232     2160     2161     1488      726     1488     1440     1233    21413
         2976     2712     2976     2880     2976     2880     2976     2232     2160     2976     2880     2976    43848
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C.2.2 SEA SURFACE TEMPERATURE (DEG C)

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         42001              VARIABLE : SST DEG C           DATES : 78/12/31:23 TO 86/12/31:23
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL

1978



1979    21.697   20.637   20.508   22.108   25.378   27.486   28.467   29.231   28.901                     25.678   24.749
          1.57     1.65     1.37     1.48     3.61      .29      .87      .39      .40                        .33    11.90
           744      672      744      720      744      720      744      399      604                        647     6738
           744      672      744      720      744      720      744      744      720                        744     8760

1980    25.013   23.906            23.552   26.036   28.435   29.498   29.368   29.212   27.653   24.785   23.447   26.689
           .21      .32              1.46     1.11      .64      .53      .58      .11      .54      .53      .98     6.07
           456      286               646      744      720      744      744      720      744      720      744     7268
           744      696               720      744      720      744      744      720      744      720      744     8784

1981    21.614   20.966   21.033   23.651   25.363   27.501   28.843   29.514   29.239   27.058   25.234   23.765   25.163
           .56      .42      .92     1.24      .43      .40      .51      .32      .38      .43      .06      .54     9.92
           744      672      744      720      206      720      744      744      368      744      720      744     7870
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1982    22.557   22.262   22.653   24.173   24.817   27.772   29.290   29.398   28.697   26.992   26.766   26.038   25.972
           .22      .57      .89      .24     1.14      .28      .45      .22      .21     1.23      .30      .29     6.82
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1983    25.529   24.652   22.969   23.208   25.138   28.407   29.835   30.473   29.080   27.765   25.702   25.592   26.531
           .67      .77      .50      .33     2.45      .58      .27      .15      .26      .63      .51     1.05     6.86
           662      672      744      720      744      720      744      744      720      415      720      581     8186
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1984    25.509   23.693   21.688   22.910   25.710   27.306   29.360   29.061   28.576   27.433   25.681   23.988   25.664
           .72     1.04      .50      .82      .42     1.34      .16     3.43      .02      .11      .92      .10     6.31
           744      696      744      720      744      720      516      744      238      744      720      744     8074
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1985             21.802   23.557   25.003   27.156            29.051   29.956   29.026   27.940   26.206   25.439   26.540
                    .56      .24     1.28     2.48               .45      .35      .33      .48      .70     1.26     7.21
                    672      744      720      352               700      744      720      744      720      540     6656
                    672      744      720      744               744      744      720      744      720      744     8760

1986    25.137   24.233   23.495   23.426   25.555   28.429   29.424   29.357   29.356   28.555   27.311   26.160   26.719
           .29      .03      .29      .13      .73      .74      .48      .40      .23      .40      .04      .17     5.27
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760
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        42001            VARIABLE : SST DEG C            DATES : 78/12/31:23 TO 86/12/31:23
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. D POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL


1987



TOTAL  23.769   22.686   22.272   23.503   25.556   27.917   29.217   29.564   29.041   27.619   25.955   24.968   26.020
         3.55     2.85     1.93     1.51     1.92      .84      .64      .94      .30      .80     1.09     1.67     7.90
         4838     5014     5208     5686     5022     5040     5680     5607     4810     4879     5040     5488    62312
         6696     5424     5952     5760     5952     5760     5952     5952     5760     5952     5760     6696    87648
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            42002             VARIABLE : SST DEG C              DATES : 79/ 1/ 1: 0 TO 86/12/31:23
            MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

             JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

   1979    21.595   20.176   20.291   22.390   24.700   27.647   28.999   29.567   28.427   27.101   24.985   22.383   24.880
              .67      .13      .34      .08      .78      .48      .22      .21      .51      .29      .65      .19    11.28
              744      672      744      720      744      720      744      744      720      744      720      744     8760
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1980    21.540   21.191   21.893   23.465   25.502   28.753   29.980   29.515   29.127   27.520   24.963   22.702   25.306
              .25      .23      .59      .16     2.03      .64      .25      .51      .15      .39      .66      .24    10.44
              744      696      744      720      744      720      744      294      720      744      720      744     8334
              744      696      744      720      744      720      744      744      720      744      720      744     8784

   1981    21.706   21.107   21.684   23.267   25.559   27.975   29.577   30.462   29.672   28.167   25.737   23.749   25.752
              .19      .25      .08     1.27      .35      .56      .37      .29      .35      .69      .49      .48    11.37
              744      672      744      720      478      720      744      744      720      744      720      744     8494
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1982    22.171   22.453   23.632   25.646   26.143   29.281   30.549   30.671   29.514   28.897   26.648   25.433   26.272
              .33      .41      .86      .17      .60      .51      .37      .10      .10      .50      .30      .68     8.13
              744      672      744      720      744      720      744      159      150      744      720      744     7605
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1983    23.114   22.664   22.595   22.224   25.074   28.191   29.972   30.534   29.561   27.993   26.030   24.987   26.124
              .29      .22      .48      .40      .72     1.30      .35      .34      .47      .38      .26      .05     9.33
              744      672      744      720      744      720      744      744      720      744      720      568     8584
              744      672      744      720      744      720      744      744      720      744      720      744     8760

   1984    21.830   21.217   20.957   21.636   24.417   27.182   29.340   29.450   28.519   27.331   25.982   24.212   25.187
              .79      .27      .75      .53      .69     1.72      .25      .11      .12      .10      .68      .08    10.07
              744      696      744      720      744      720      744      744      720      744      720      744     8784
              744      696      744      720      744      720      744      744      720      744      720      744     8784

   1985    22.483   21.919                     26.954   28.748   28.544   30.998   30.249   28.963   26.620   23.954   27.005
              .75      .03                       1.17      .63      .86      .57      .31      .47      .42      .95     7.64
              744       15                        698      720      233      154      720      744      720      744     5492
              744      672                        744      720      744      744      720      744      720      744     8760

   1986    22.943   23.052   22.609   23.978   26.406                                                26.540   24.943   24.326
              .43      .35      .47      .57     1.38                                                   .28      .83     2.93
              744      672      744      652      743                                                   627      744     4926
              744      672      744      720      744                                                   720      744     8760

   1987



   TOTAL   22.173   21.690   21.952   23.219   25.585   28.254   29.677   30.036   29.268   27.996   25.928   24.017   25.599
              .79     1.18     1.58     2.11     1.67     1.28      .63      .55      .72      .86      .88     1.49     9.85
             5952     4767     5208     4972     5639     5040     4697     3583     4470     5208     5667     5776    60979
             6696     5424     5952     5760     5952     5760     5952     5952     5760     5952     5760     5952    70080
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      42003            VARIABLE : SST DEG C           DATES : 79/ 1/ 1: 0 TO 86/12/31:16
      MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

               JAN     FEB     MAR     APR     MAY     JUN     JLY     AUG     SEP     OCT     NOV     DEC   ANNUAL

287  1979   25.800  25.593  25.448  25.420  26.992  28.275  29.421  295558                                  26.888
               .29     .11     .10     .11    1.73    1.96     .15     .12                                    3.11
               744     672     744     720     744     720     744     319                                    5407
               744     672     744     720     744     720     744     744                                    8760

     1980   22.202  24.594  25.908  26.143  27.604  28.799  29.401          29.105  28.590  27.487  25.982  26.756
               .42    1.78     .10     .07     .53     .30     .05             .13     .06     .25     .28    3.85
               462     696     744     720     744     720      93             442     744     720     744    6829
               744     696     744     720     744     720     744             720     744     720     744    8784

     1981   24.176  23.697  23.282  25.823  26.022  28.433  29.300  29.630  29.331  28.486  27.657  26.226  26.851
              2.22    1.61     .76     .57     .31     .96     .46     .18    2.69     .08     .09     .21    5.62
               744     672     744     720     744     720     744     744     720     744     720     744    8760
               744     672     744     720     744     720     744     744     720     744     720     744    8760

     1982   25.720  26.969  27.029  27.274  27.295  28.875  30.651  29.502  29.111  28.551  27.024  26.242  27.693
               .11     .10     .14     .14     .36     .71     .41     .63     .21     .23     .08     .13    1.98
               744     672     744     720     744     720     469     390     720     744     720     744    8131
               744     672     744     720     744     720     744     744     720     744     720     744    8760

     1983   25.053  24.576  24.464  25.819  27.191  27.931  29.146  29.962  29.033  28.577  27.597  26.692  27.197
               .67     .43    1.58     .42     .41     .61     .37     .29     .14     .12     .10     .09    3.70
               744     672     744     720     744     720     744     744     720     744     720     575    8591
               744     672     744     720     744     720     744     744     720     744     720     744    8760

     1984                   26.151  25.868  26.881  27.684  28.836  28.897  28.306  26.926  25.859  23.514  26.946
                               .15     .40     .32     .99     .44     .41     .45     .13    1.38     .36    3.13
                               241     720     744     720     744     744     720     744     720     744    6841
                               744     720     744     720     744     744     720     744     720     744    8784

     1985   24.376  25.216  25.507  24.887  27.039  28.749  29.139  29.899  28.458  28.112  25.442  23.309  26.558
               .91     .21     .24     .94     .72     .70     .67     .57     .19     .29     .61     .83    4.78
               744     672     744     720     744     720     744     581     412     744     720     744    8289
               744     672     744     720     744     720     744     744     720     744     720     744    8760

     1986   22.767  23.048  23.022  24.817  27.204  28.538  29.479  29.539  29.414  28.066  26.912  25.070  26.509
               .51     .44    1.59    1.76     .16     .38     .52     .17     .11    1.02     .06     .47    6.98
               744     672     744     720     744     720     744     744     720     744     720     737    8753
               744     672     744     720     744     720     744     744     720     744     720     744    8760

     TOTAL  24.419  24.812  25.005  25.756  27.029  28.410  29.357  29.564  28.992  28.187  26.854  25.244  26.926
              2.24    2.08    2.39    1.08     .75     .99     .64     .45     .77     .58    1.03    1.96    4.39
              4926    4728    5449    5760    5952    5760    5026    4266    4454    5208    5040    5032   61601
              5952    5424    5952    5760    5952    5760    5952    5952    5760    5952    5760    5952   70128
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42007               VARIABLE : SST DEG C             DATES : 84/ 1/ 1: 0 TO 86/12/19: 1
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

1984    10.834   12.797   15.428   19.211   24.546   26.872   28.288   27.988   26.432   24.373   19.720   15.861   21.052
           .59     2.19     3.66     2.47     1.57     4.02      .94      .68     1.53      .58     7.14     3.38    37.64
           744      696      744      720      744      720      744      744      720      744      720      744     8784
           744      696      744      720      744      720      744      744      720      744      720      744     8784

1985    13.182   12.224   18.462   21.285   25.296   26.606   27.821   28.791   26.812   23.249   20.697   16.787   21.766
          6.21     4.02     2.52     5.67     1.37     2.07     1.16      .62     1.59     1.16     1.14     6.80    31.76
           744      672      744      720      623      720      744      598      720      744      720      553     8302
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1986             14.476   15.848   20.141   24.409   28.586   29.282   28.608   27.679   24.553   19.894   16.277   23.924
                    .20     1.99      .96     1.53      .62      .38      .78      .31     7.93      .60     1.07    25.03
                    222      485      720      744      720      744      744      720      744      572      434     6849
                    672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   12.008   12.789   16.675   20.212   24.719   27.355   28.464   28.439   26.974   24.058   20.119   16.261   22.122
          4.78     3.21     4.78     3.75     1.64     3.00     1.20      .82     1.41     3.55     3.32     4.05    33.38
          1488     1590     1973     2160     2111     2160     2232     2086     2160     2232     2012     1731    23935
          2232     2040     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    26304
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         42008              VARIABLE : SST DEG C            DATES : 80/10/ 1: 0 TO 82/ 9/ 1: 5
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN       FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP       OCT       NOV       DEC      ANNUAL

1980                                                                                            25.700    19.316    15.242    20.094
                                                                                                  3.72      4.95       .96     21.91
                                                                                                   744       720       744      2208
                                                                                                   744       720       744      8784

1981   12.666    12.118    15.682    21.361    24.822    28.245    29.875    30.542    28.522    26.295    20.931    18.848    22.663
         1.03      1.34       .91      4.20       .50      1.25       .48       .15      2.09      4.19       .87      1.07     41.63
          744       672       744       720       744       720       744       744       720       744       720       489      8505
          744       672       744       720       744       720       744       744       720       744       720       744      8760

1982   12.746    12.962    17.008    19.653    24.315    27.798    28.876    29.533    30.212                                  21.915
         1.12      1.52      4.74      2.93      3.20       .46       .30       .26       .02                                   43.67
          629       672       744       657       744       720       744       744         6                                    5660
          744       672       744       720       744       720       744       744       720                                    8760

TOTAL  12.703    12.540    16.345    20.546    24.569    28.021    29.376    30.037    28.536    25.997    20.123    16.672    22.058
         1.07      1.60      3.27      4.32      1.91       .91       .64       .46      2.10      4.04      3.56      4.12     40.39
         1373      1344      1488      1377      1488      1440      1488      1488       726      1488      1440      1233     16373
         1488      1344      1488      1440      1488      1440      1488      1488      1440      1488      1440      1488     26304
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C.2.3 AIR - SEA SURFACE TEMPERATURE (DEG C)

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BLANK
PAGE

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42001 VARIABLE : AIR - SST DEG C DATES : 78/12/31:23 TO 86/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1978													
1979	-3.329	-1.413	-.178	.567	-.053	-.293	-.315	-1.053	-1.045			-3.183	-1.001
	10.69	7.96	4.60	1.01	3.64	.27	1.09	.59	.71			3.75	5.21
	744	672	744	720	744	720	744	399	604			647	6738
	744	672	744	720	744	720	744	744	720			744	8760
1980	-3.301	-5.511		-1.396	-.394	-.600	-1.094	-.760	-1.074	-1.991	-2.475	-2.992	-1.699
	6.43	6.54		3.24	.73	.23	.78	.55	.88	1.35	3.97	6.03	3.86
	456	286		646	744	720	744	744	720	744	720	744	7268
	744	696		720	744	720	744	744	720	744	720	744	8784
1981	-3.578	-1.866	-.977	-.242	-.766	.704	.229	-.061	.390	.436	-.365	-.792	-.600
	5.54	5.37	3.00	.29	.42	.31	.42	.60	.55	1.82	1.53	4.73	3.61
	744	672	744	720	206	720	744	744	368	744	720	744	7870
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1982	.364	1.268	1.340	1.847	2.308	1.342	.799	1.199	1.148	-.625	-2.696	-2.774	.454
	5.87	1.97	2.68	.64	.54	.63	.90	.58	.79	1.01	2.51	3.70	4.35
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1983	-4.953	-3.319	-1.367	.044	.736	-.286	-.182	-.523	-.765	-.958	-1.218	-1.905	-1.174
	3.63	3.95	4.27	2.29	1.12	.71	.46	.53	1.01	1.54	3.84	7.49	4.74
	662	672	744	720	744	720	744	744	720	415	720	581	8186
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1984	-4.269	-3.104	-1.258	-.272	-1.484	-1.971	-2.930	-2.716	-1.126	-1.004	-2.460	-.729	-1.964
	5.98	7.61	4.78	1.81	1.93	3.05	3.88	3.36	.55	1.43	2.89	2.99	4.79
	744	696	744	720	744	720	516	744	238	744	720	744	8074
	744	696	744	720	744	720	744	744	720	744	720	744	8784
1985		-1.181	-.309	-.645	-1.344		-1.079	-1.552	-1.496	-1.551	-1.488	-4.645	-1.455
		4.90	.86	1.79	.75		.62	.89	.64	1.30	2.67	6.47	3.08
		672	744	720	352		700	744	720	744	720	540	6656
		672	744	720	744		744	744	720	744	720	744	8760
1986	-4.063	-2.112	-2.854	-1.182	-.529	-.931	-1.254	-1.145	-.964	-2.196	-1.415	-3.662	-1.865
	5.99	6.13	8.68	.76	.30	.79	.53	.95	.32	1.46	1.04	3.82	3.76
	744	672	744	720	744	720	744	744	720	744	720	744	8760
	744	672	744	720	744	720	744	744	720	744	720	744	8760

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         42001              VARIABLE : AIR - SST DEG C       DATES : 78/12/31:23 TO 86/12/31:23
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP      OCT       NOV       DEC      ANNUAL


1987



TOTAL   -3.277   -1.901    -.800     -.144     -.039     -.291     -.637     -.812     -.629   -1.138    -1.731    -2.518    -1.145
          9.02     8.15     5.55      2.38      2.70      1.85      1.96      2.22      1.45     2.14      3.25      6.33      4.79
          4838     5014     5208      5686      5022      5040      5680      5607      4810     4879      5040      5488     62312
          6696     5424     5952      5760      5952      5760      5952      5952      5760     5952      5760      6696     87648
          42002              VARIABLE : AIR - SST DEG C       DATES : 79/ 1/ 1: 0 TO 86/12/31:23
          MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN       FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP       OCT       NOV       DEC     ANNUAL

 1979    -3.576    -1.389     -.431      .134     -.219     -.521     -.761    -1.213    -1.366    -1.672    -3.298    -2.073    -1.366
          13.19      5.85      1.77       .68       .79       .24       .48       .77       .46      1.74      6.45      4.78      4.32
            744       672       744       720       744       720       744       744       720       744       720       744      8760
            744       672       744       720       744       720       744       744       720       744       720       744      8760

 1980    -1.247    -2.468     -.780    -1.366     -.355     -.732     -.987     -.792     -.888    -2.291    -3.096    -2.268    -1.467
           5.02      7.62      7.08      3.08       .35       .16       .62       .36       .31      2.91      5.15      4.53      3.93
            744       696       744       720       744       720       744       294       720       744       720       744      8334
            744       696       744       720       744       720       744       744       720       744       720       744      8784

 1981    -3.491    -2.257    -1.667     -.342     -.527     -.402     -.960    -1.453    -1.590    -1.863    -1.872    -1.970    -1.564
           4.53      5.34      2.76       .27       .66       .23       .38       .57       .92      2.25      3.10      4.67      2.90
            744       672       744       720       478       720       744       744       720       744       720       744      8494
            744       672       744       720       744       720       744       744       720       744       720       744      8760

 1982    -1.864    -1.595    -1.323    -1.038     -.649     -.683    -1.068     -.878    -1.543    -1.977    -2.019    -2.543    -1.466
           9.23      5.60      5.37      1.46       .46       .15       .25       .14       .44      2.02      4.12      6.95      3.77
            744       672       744       720       744       720       744       159       150       744       720       744      7605
            744       672       744       720       744       720       744       744       720       744       720       744      8760

 1983    -3.338    -2.939    -2.160      -.76     -.301     -.624     -.935    -1.080    -1.450    -2.197    -2.512    -2.585    -1.718
           4.20      3.48      3.99      1.92       .50       .35       .61       .69      1.05      2.03      4.74      4.47      3.21
            744       672       744       720       744       720       744       744       720       744       720       568      8584
            744       672       744       720       744       720       744       744       720       744       720       744      8760

 1984    -3.025    -2.344    -1.091      .169     -.207     -.687    -1.384    -1.317    -1.349     -.890    -2.988    -1.130    -1.350
           5.64      7.15      4.28      1.15       .98       .28       .63       .29      1.01      1.30      5.47      4.31      3.59
            744       696       744       720       744       720       744       744       720       744       720       744      8784
            744       696       744       720       744       720       744       744       720       744       720       744      8784

 1985    -3.666    -2.619                        -1.966    -1.951    -2.322    -8.115    -4.886    -5.541    -4.935    -6.054    -4.194
          10.41      6.81                           .46      1.02      1.50     19.01       .78      1.41      1.54      5.36      6.19
            744        15                           698       720       233       154       720       744       720       744      5492
            744       672                           744       720       744       744       720       744       720       744      8760

 1986    -5.580    -4.807    -4.720    -3.698    -1.321                                                    -2.210    -3.696    -3.740
           3.64      4.49      3.24       .35       .60                                                      4.12      3.78      4.87
            744       672       744       652       743                                                       627       744      4926
            744       672       744       720       744                                                       720       744      8760

 1987



 TOTAL   -3.224    -2.542    -1.739     -.950     -.690     -.800    -1.081    -1.504    -1.909    -2.347    -2.877    -2.796    -1.913
           8.44      6.74      5.82      2.71       .95       .58       .66      3.33      2.49      3.83      5.19      6.89      4.85
           5952      4767      5208      4972      5639      5040      4697      3583      4470      5208      5667      5776     60979
           6696      5424      5952      5760      5952      5760      5952      5952      5760      5952      5760      5952     78888
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             42003             VARIABLE : AIR - SST DEG C       DATES : 79/ 1/ 1: 0 TO 86/12/31:16
             MEAN/VARIANE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

                JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

    1979     -5.498   -4.556   -3.551   -1.240   -1.821   -1.324   -1.102   -1.012                                     -2.615
              10.43     9.19     3.85     1.16     1.44      .97      .52      .18                                       6.43
                744      672      744      720      744      720      744      319                                       5407
                744      672      744      720      744      720      744      744                                       8760

    1980     -1.219   -5.413   -2.807   -2.346   -1.557   -1.086    -.753              -.987   -2.307   -3.983   -4.877   -2.748
               2.88    14.92     9.83     3.21      .91      .44      .24                .52     1.15     4.67     4.50     6.69
                462      696      744      720      744      720       93                442      744      720      744     6829
                744      696      744      720      744      720      744                720      744      720      744     8784

    1981     -6.086   -3.285   -2.180   -1.707   -1.223    -.541    -.958   -1.238   -1.550   -2.182   -3.665   -4.341   -2.412
               7.25     4.95     2.78     1.17     1.30      .55      .37      .83      .77     1.18     2.91     9.17     5.23
                744      672      744      720      744      720      744      744      720      744      720      744     8760
                744      672      744      720      744      720      744      744      720      744      720      744     8760

    1982     -3.734   -2.775   -2.956   -1.888   -1.488    -.995   -1.627    -.888   -1.502   -2.318   -2.434   -2.640   -2.171
               8.27     2.39     6.02     1.93      .84      .45      .30     1.12     1.32     2.45     3.48     5.00     3.61
                744      672      744      720      744      720      469      390      720      744      720      744     8131
                744      672      744      720      744      720      744      744      720      744      720      744     8760

    1983     -4.505   -4.387   -3.744   -3.207   -2.011   -1.181    -.894   -1.142   -1.657   -1.964   -3.169   -2.928   -2.546
               5.35     3.70     6.81     2.94      .96      .82      .52      .79     1.48     1.59     3.76     4.19     4.17
                744      672      744      720      744      720      744      744      720      744      720      575     8591
                744      672      744      720      744      720      744      744      720      744      720      744     8760

    1984                       -1.159     .450    1.361    -.256   -1.939   -1.628   -1.425    -.723   -1.685     .622    -.598
                                 3.84     2.29      .81     3.33      .83      .71      .79      .73     2.62     2.30     2.90
                                  241      720      744      720      744      744      720      744      720      744     6841
                                  744      720      744      720      744      744      720       44      720      744     8784

    1985     -2.257   -1.724    -.270     .594     .706     .542     .543     .525     .554     .742    1.324     .563     .141
               7.17     5.51     1.07     2.27      .72      .76      .80      .97      .56      .77     1.94     3.20     3.28
                744      672      744      720      744      720      744      581      412      744      720      744     8289
                744      672      744      720      744      720      744      744      720      744      720      744     8760

    1986      1.009    2.115    1.807    -.356   -1.452   -1.023   -1.157   -1.033    -.943   -1.611    -.867   -2.457    -.514
               3.15     3.18     7.80    11.27      .63      .48      .67      .54      .37      .86      .51     3.13     4.49
                744      672      744      720      744      720      744      744      720      744      720      737     8753
                744      672      744      720      744      720      744      744      720      744      720      744     8760

    TOTAL    -3.297   -2.874   -1.922   -1.212    -.936    -.733    -.981    -.964   -1.191   -1.480   -2.068   -2.273   -1.639
              12.07    11.73     8.75     4.87     2.32     1.31     1.11     1.15     1.24     2.31     5.79     8.64     5.69
               4926     4728     5449     5760     5952     5760     5026     4266     4454     5208     5040     5032    61601
               5952     5424     5952     5760     5952     5760     5952     5952     5760     5952     5760     5952    70128
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           42007          VARIABLE : AIR - SST DEG C      DATES : 84/ 1/ 1: 0 TO 86/12/19: 1
           MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL

1984     -1.693    -.322    -.567     .037    -.917    -.715    -.920    -.850    -.938    -.202   -3.069     .178     -.831
          13.44     9.42     5.74     2.17     3.48      .68      .98     1.31     4.13     3.23    13.61    12.79      6.58
            744      696      744      720      744      720      744      744      720      744      720      744      8784
            744      696      744      720      744      720      744      744      720      744      720      744      8784

1985     -4.270    -.741    -.154    -.322    -.556    -.062    -.480    -.709    -.624     .168    -.608   -4.306    -1.004
          28.52    13.82     2.90     1.65     2.20     1.06     1.17     1.20     2.57     7.00     5.38    26.01      9.63
            744      672      744      720      623      720      744      598      720      744      720      553      8302
            744      672      744      720      744      720      744      744      720      744      720      744      8760

1986                .636     .408    -.506    -.648    -.772    -.507    -.660     .070   -1.492   -1.145   -2.557     -.694
                    8.24     8.21     2.78     1.11      .78      .99     2.47      .57     5.27    11.39    11.35      4.53
                     222      485      720      744      720      744      744      720      744      572      434      6849
                     672      744      720      744      720      744      744      720      744      720      744      8760

TOTAL    -2.981    -.365    -.172    -.264    -.716    -.516    -.636    -.742    -.497    -.509   -1.642   -1.940     -.852
          22.63    11.30     5.41     2.25     2.28      .94     1.09     1.70     2.60     5.67    11.21    20.45      7.07
           1488     1590     1973     2160     2111     2160     2232     2086     2160     2232     2012     1731     23935
           2232     2040     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232     26304
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42008               VARIABLE : AIR - SST DEG C       DATES : 80/10/ 1: 0 TO 82/ 9/ 1: 5
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1980                                                                                    1.089    3.386    1.651    2.027
                                                                                         7.24     4.60    28.74    14.56
                                                                                          744      720      744     2208
                                                                                          744      720      744     8784

1981    -.775     .214     .373     .329    -.350    -.623   -1.135   -1.524   -1.573   -2.047    -.998   -2.167    -.828
         8.11    13.04     2.90     1.00     2.07     1.12      .74      .68     3.59    10.88     8.86    14.52     5.99
          744      672      744      720      744      720      744      744      720      744      720      489     8505
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1982    -.353   -1.104    -.121    -.226    -.638    -.355    -.731   -1.145    -.928                               -.589
        20.64    17.58     8.41     4.99      .74      .68      .24      .57      .03                                7.37
          629      672      744      657      744      720      744      744        6                                5660
          744      672      744      720      744      720      744      744      720                                8760

TOTAL   -.582    -.445     .126     .064    -.494    -.489    -.933   -1.335   -1.568    -.479    1.194     .137    -.360
        17.55    15.74     5.71     2.98     1.43      .92      .53      .66     3.56    11.52    11.53    26.58     8.52
         1373     1344     1488     1377     1488     1440     1488     1488      726     1488     1440     1233    16373
         1488     1344     1488     1440     1488     1440     1488     1488     1440     1488     1440     1488    26304
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C.2.4 SENSIBLE HEAT FLUX, QH, (Wm^{-2})

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      42001             VARIABLE : QH W/M**2             DATES : 79/ 1/ 1: 0 TO 86/12/31:23
      MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

979      48.199   19.560    6.716   -3.711    3.197    1.952    2.922    8.101   11.872                     37.587   13.655
        3464.04   970.66   318.39    68.05   176.80    27.61    89.87   163.85   195.85                    1086.18   950.92
            744      672      744      720      744      720      744      399      604                        647     6738
            744      672      744      720      744      720      744      744      720                        744     8760

1980     41.097   76.625            15.567    2.980    4.185    8.169    5.350    9.120   21.624   33.537   38.743   19.367
        1958.33  2453.83            642.33    74.92    15.35   157.45   134.84   105.52   384.78  1065.37  1560.19   933.88
            416      286               646      744      720      744      744      720      744      720      744     7228
            744      696               720      744      720      744      744      720      744      720      744     8784

1981     43.111   25.601   12.399    1.901            -5.746    -.901     .426   -1.663    -.660    3.031   13.574    9.149
        1538.59  2157.55   571.68    58.74             38.52    32.92    51.89    31.57   128.14   184.35  1174.99   800.29
            744      672      744      229               720      744      744      368      744      720      744     7173
            744      672      744      720               720      744      744      720      744      720      744     8760

1982      3.783   -6.339   -5.675  -12.283  -14.208   -6.684   -1.691   -3.727   -6.511    6.773   38.683   39.202    2.676
        1577.89   188.39   388.63   133.12   139.83    51.61    15.16    27.07    71.84   138.90  1733.97  1462.74   791.39
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1983     63.613   52.202   18.153     .401   -7.318    2.243    1.027    3.292   11.342   11.223   16.387   31.778   16.441
        1745.43  1823.61  1028.94   474.62   169.92    77.15    30.01    58.33   275.54   402.47   972.04  4649.56  1379.14
            662      672      744      720      744      720      744      744      497      415      720      581     7963
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1984     60.450   48.495   17.207    4.020   19.700   20.289   24.105   24.715   15.997   11.901   34.159    9.167   24.596
        2819.20  3006.37  1053.48   423.50   789.10   350.20   386.14   267.58   178.14   261.71  1028.35   821.12  1264.02
            744      696      744      720      744      720      516      744      238      744      720      744     8074
            744      696      744      720      744      720      744      744      720      744      720      744     8784

1985              21.412    3.626    9.014   11.784             6.668   13.182   15.159   20.640   15.643   54.864   16.430
                 1811.05   204.03   300.82    64.14             69.81   548.32   136.29   481.98   512.45  2577.03   803.65
                     672      744      720      352               700      744      720      744      720      540     6656
                     672      744      720      744               744      744      720      744      720      744     8760

1986     49.419   25.236   35.741   10.734    4.036    7.238    7.662    7.969    6.661   20.270   15.823   48.783   20.029
        2617.99  1270.62  2669.98    80.96    19.02   292.97    67.38   165.68    24.66   209.06   295.79  1387.87  1010.17
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1987



TOTAL    44.123   29.554   12.595    3.153    2.157    3.354    5.263    7.371    7.323   13.238   22.466   33.457   15.246
        2625.37  2101.37  1037.84   360.05   326.42   191.69   143.74   243.87   175.45   341.64   973.33  1961.20  1041.97
           4798     5014     5208     5195     4816     5040     5680     5607     4587     4879     5040     5408    61352
           6696     5424     5952     5760     5952     5760     5952     5952     5760     5952     5760     5952    78888
      42002             VARIABLE : QH W/M**2          DATES : 79/ 1/ 1: 0 TO 86/12/31:23
      MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1979     59.256   18.642    6.305   -1.033    2.495    4.367    7.402    9.557   17.197   14.985   49.294   26.386   17.903
        5489.84   967.74   289.00    87.60   130.39    27.08    97.30   143.36   202.25   338.25  2481.18  1073.35  1269.83
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1980     16.149   35.321   15.955   19.046    2.905    6.198    6.746    7.549    7.368   28.024   40.673   24.684   17.980
        1125.04  2362.62  2601.99  1512.73    60.47    19.47    62.71   106.78    40.03  1301.50  1702.56   977.17  1170.35
            744      696      744      720      744      720      744      294      720      744      720      744     8334
            744      696      744      720      744      720      744      744      720      744      720      744     8784

1981     42.962   33.845   19.348    3.532    5.124    3.002    6.757    9.239   14.905   19.807   16.997   25.225   17.027
        1377.77  2756.53   574.26    66.96    77.95    21.66    47.66    58.96   274.17   469.78   473.31  1183.31   761.02
            744      672      744      720      478      720      744      744      720      744      720      744     8494
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1982     28.991   22.637   17.047   11.846    6.249    4.316    6.096    6.146   13.754   21.571   27.995   35.986   17.923
        3456.89  1145.11  1240.55   251.80    55.41     7.03    19.93    16.64    76.71   471.23  1499.33  2129.45  1097.75
            744      672      744      720      744      720      744      159      150      744      720      744     7605
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1983     40.139   37.273   25.521    9.780    3.221    4.867    7.102    8.145   16.311   22.728   36.180   36.124   20.201
        1173.35   991.32   837.99   380.26    68.00    31.96    94.76   182.03   334.74   581.92  1827.30  1481.93   826.43
            744      672      744      720      744      720      744      744      720      744      720      568     8584
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1984     36.077   31.809   13.415   -1.796    3.781    5.390    9.421    9.607   14.835    8.477   40.126   13.434   15.299
        1529.71  2011.34   754.35    99.51   213.62    21.20    68.86    46.99   233.78   176.97  1620.99  1111.25   813.12
            744      696      744      720      744      720      744      744      720      744      720      744     8784
            744      696      744      720      744      720      744      744      720      744      720      744     8784

1985     57.462   56.295                     19.585   20.568   24.216   79.022   61.681  101.337   64.625   96.190   59.685
        5386.61  4816.36                     130.01   167.96   510.49  2094.43   763.31  5791.37   951.73  4000.24  3297.93
            744       15                        698      720      233      154      720      744      720      744     5492
            744      672                        744      720      744      744      720      744      720      744     8760

1986     82.280   68.274   60.901   44.702   14.397                                                35.527   56.629   52.103
        3925.57  3133.18  1908.51   209.77    75.07                                               1979.68  2035.25  2349.49
            744      672      744      652      743                                                   627      744     4926
            744      672      744      720      744                                                   720      744     8760

1987


TOTAL    45.415   35.447   22.642   11.854    7.216    6.958    8.095   11.878   21.771   30.990   38.983   39.430   24.268
        3297.59  2137.26  1444.07   585.15   137.40    73.88   101.73   391.75   615.64  2160.60  1734.98  2373.77  1518.43
           5952     4767     5208     4972     5639     5040     4697     3583     4470     5208     5667     5776    60979
           6696     5424     5952     5760     5952     5760     5952     5952     5760     5952     5760     5952    78888
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                42003             VARIABLE : QH W/M**2              DATES : 79/ 1/ 1: 0 TO 86/12/31:16
              MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1979     80.657   50.712   42.898   12.024   19.686   11.016   10.148    5.489                                        30.800
        3898.06  2092.02   919.38   149.88   251.78    75.47   173.78    11.34                                       1635.01
            744      672      744      720      744      720      744      319                                          5407
            744      672      744      720      744      720      744      744                                          8760

1980     13.817   71.452   42.205   25.523   14.805    7.551    4.733             6.780   22.232   55.302   60.541   33.267
         462.66  4131.00  4088.05   657.67   116.07    48.40    19.65             41.94   236.49  1329.60  1693.32  1834.68
            462      696      744      720      744      720       93               442      744      720      744     6029
            744      696      744      720      744      720      744               720      744      720      744     8784

1981     66.979   46.854   24.290   18.530    9.259    3.272    5.337    8.596   11.453   21.531   35.958   51.155   25.178
        2074.63  2223.19   575.97   329.45    97.30    40.12    41.72   125.02   145.65   359.20   440.72  2413.90  1120.67
            744      672      744      720      744      720      744      744      720      744      720      744     8760
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1982     46.487   30.422   35.869   18.591   15.536    6.125    7.259    4.295   11.597   24.944   32.071   33.007   23.440
        2598.33   580.15  1484.18   380.43   126.93    75.35    23.47    60.73   154.59   478.21  1336.22  1279.29   931.02
            744      672      744      720      744      720      469      390      720      744      720      744     8131
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1983     48.144   63.742   49.709   37.760   19.048    9.290    5.085    5.234   16.255   19.134                     27.042
        1237.90  1830.96  1743.65   621.30   153.48    73.53    54.93    43.07   294.76   298.63                    1012.02
            744      672      744      720      744      720      744      744      720      744                       7296
            744      672      744      720      744      720      744      744      720      744                       8760

1984                       13.118   -5.152  -12.577     .576   14.347   11.757   13.646    9.275   23.325   -5.396    5.765
                          1233.44   405.04   170.29   274.37   124.51    56.34   111.40   154.41   673.88   365.94   411.59
                              241      720      744      720      744      744      720      744      720      744     6841
                              744      720      744      720      744      744      720      744      720      744     8784

1985     34.288   30.910    3.784   -1.579   -3.228   -3.110   -2.583   -2.443   -5.989   -8.854  -12.531   -1.933    2.517
        2415.89  2607.50   265.01   302.28    33.97    64.06    38.30    68.09    94.90   160.47   636.37   474.87   825.55
            744      672      744      720      744      720      744      581      365      744      720      744     8242
            744      672      744      720      744      720      744      744      720      744      720      744     8760

1986     -8.000  -13.493   -8.303    5.915   11.997    6.210    6.518    7.767    7.156   15.422    8.600   29.084    5.866
         695.25   438.77  1935.85  1095.65    58.08    25.82    36.47    54.56    29.18   170.60    85.67   656.99   560.60
            744      672      744      720      744      720      744      744      720      744      720      737     8753
            744      672      744      720      744      720      744      744      720      74       720      744     8760

TOTAL    41.857   40.245   26.584   13.951    9.316    5.116    6.516    6.288   10.004   14.812   23.788   27.741   18.484
        2782.35  2686.26  1956.59   669.35   240.22   103.55    95.92    81.76   164.94   381.24  1209.62  1753.32  1140.11
           4926     4728     5449     5760     5952     5760     5026     4266     4407     5208     4320     4457    60259
           5952     5424     5952     5760     5952     5760     5952     5952     5760     5952     5760     5952    70128
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              42007              VARIABLE : GH W/M**2            DATES : 84/ 3/10: 0 TO 86/12/19: 1
              MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

                  JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

       1984                       9.496    2.494   11.770    5.126    6.461    5.894   13.519    2.955   40.609   14.803   11.267
                                1030.51   395.20   971.70    50.07    83.32    86.56   768.04   412.20  2695.78  2454.69   982.78
                                    528      720      744      720      744      744      720      744      720      653     7037
                                    744      720      744      720      744      744      720      744      720      744     8784

       1985    59.095   12.928    5.202    4.352    5.493    1.663    3.568    7.072    9.077    8.483   12.210   56.554   15.006
              6994.36  2207.88   403.37   240.94   164.69    84.62    65.63   162.88   498.35   923.60   748.10  5970.89  1829.29
                  744      429      744      720      623      720      744      598      720      744      720      553     8059
                  744      672      744      720      744      720      744      744      720      744      720      744     8760

       1986             3.891    5.429    5.710    6.409    4.967    4.069    8.491     .301   17.375   22.875   40.582   10.094
                       954.24  1788.69   323.46   122.32    54.90    64.92   334.34    30.85   822.10  2445.55  2016.09   779.03
                          222      485      720      744      720      744      744      720      744      572      434     6849
                          672      744      720      744      720      744      744      720      744      720      744     8760

       TOTAL   59.095    9.846    6.555    4.185    8.028    3.918    4.700    7.158    7.632    9.603   25.405   35.703   12.274
              6994.36  1796.63   976.68   321.31   441.55    65.69    72.82   197.83   462.19   753.94  2072.62  3047.07  1234.50
                  744      651     1757     2160     2111     2160     2232     2086     2160     2232     2012     1640    21945
                 1488     1344     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    26304
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          42008               VARIABLE : GH W/M**2           DATES : 80/10/ 1: 0 TO 82/ 9/ 1: 5
          MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

            JAN       FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP       OCT       NOV       DEC    ANNUAL

 1980                                                                                             -3.738   -15.290    10.459    -2.721
                                                                                                  886.57    607.58   2837.39   1562.08
                                                                                                     744       720       744      2208
                                                                                                     744       720       744      8784

 1981    14.329    16.074     -.305     -.885     5.634     6.741    11.347    15.416    19.441    34.921    18.176    38.484    14.279
        1314.37   3479.84    416.00    186.47    492.05    321.83    142.55    187.48   1293.23   4820.31   2499.00   4830.55   1684.59
            744       672       744       720       744       720       744       744       720       744       720       489      8505
            744       672       744       720       744       720       744       744       720       744       720       744      8760

 1982    32.530    34.330    14.948    11.301     6.659     2.909     5.853     8.457     8.337                                  14.103
        7334.69   4505.56   2836.45   1270.15    179.34     82.23     20.24     48.02       .60                                 2034.34
            629       672       744       657       744       720       744       744         6                                    5660
            744       672       744       720       744       720       744       744       720                                    8760

 TOTAL   22.667    25.202     7.321     4.929     6.147     4.825     8.600    11.936    19.350    15.591     1.443    21.574    11.925
        4151.36   4073.11   1683.33    740.04    335.73    205.56     88.09    129.78   1283.54   3225.41   1832.39   3812.69   1822.27
           1373      1344      1488      1377      1488      1440      1488      1488       726      1488      1440      1233     16373
           1488      1344      1488      1440      1488      1440      1488      1488      1440      1488      1440      1488     26304
```

C.3 NATIONAL DATA BUOY CENTER (NDBC) CMAN STATIONS

303

C.3.1 AIR TEMPERATURE (DEG C)

304

305

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ALLIGATOR REEF, FLA     VARIABLE : AIR TEMPERATURE C    DATES : 86/ 1/ 1: 0 TO 87/12/ 4:15
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL

1986    20.080   21.787   20.893   22.606   24.644            28.426   28.224   28.194   26.848   26.419   23.675   24.603
         12.36     7.55    16.39     2.66      .52               .53     1.06      .39     2.22      .39     4.08    13.67
           744      672      744      720      384               490      744      720      744      720      744     7426
           744      672      744      720      744               744      744      720      744      720      744     8760

1987    20.810   21.697   22.089   21.147   25.453   27.795   28.485   28.867   28.682   23.307   24.269   19.844   24.859
         14.31     7.19     4.59     9.90      .36      .70      .41      .54      .90     2.90     5.16      .98    14.14
           489      672      744      720      705      510      744      744      582       75      720       88     6793
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   20.369   21.742   21.491   21.877   25.167   27.795   28.461   28.546   28.412   26.524   25.344   23.270   24.725
         13.25     7.37    10.84     6.81      .56      .70      .46      .91      .68     3.32     3.93     5.14    13.91
          1233     1344     1488     1440     1089      510     1234     1488     1302      819     1440      832    14219
          1488     1344     1488     1440     1488     1440     1488     1488     1440     1488     1440     1488    17520
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VENICE, FLA       VARIABLE : AIR TEMPERATURE  C    DATES : 87/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

1987    15.587   15.485   21.404   20.079   23.676   26.404   27.183   27.837   26.654   21.605   20.262   17.758   22.503
         13.90    16.56     3.40     3.97     6.29     5.05     5.56     4.60     4.97    10.57    15.78    18.03    26.60
           744      210      161      562      744      720      744      744      683      744      720      744     7520
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   15.587   15.485   21.404   20.079   23.676   26.404   27.183   27.837   26.654   21.605   20.262   17.758   22.503
         13.90    16.56     3.40     3.97     6.29     5.05     5.56     4.60     4.97    10.57    15.78    18.03    26.60
           744      210      161      562      744      720      744      744      683      744      720      744     7520
          1488      672      744      720      744      720      744      744      720      744      720      744    17544
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CAPE SAN BLAS, FLA VARIABLE : AIR TEMPERATURE C   DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1985	10.025	12.817	17.897	20.013	23.622	25.879	27.211	27.305	25.306	24.253	21.345	12.472	20.691
	39.14	20.63	6.29	6.66	2.90	2.89	2.36	4.56	7.80	7.15	8.60	35.30	47.23
	744	672	744	667	744	720	744	744	720	710	515	744	8468
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1986	11.973	14.594	16.218	19.312	23.658	27.698	28.563	27.301	26.878	22.367	20.425	13.937	21.118
	15.67	19.81	15.92	5.58	6.86	2.53	1.83	7.22	3.69	19.18	12.94	15.74	42.51
	744	672	744	720	744	720	744	744	720	744	720	726	8742
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1987	11.933	13.457	15.82	17.837	23.364	26.775	28.432	28.457	26.049	18.763	17.038	14.900	20.045
	15.83	9.02	10.30	13.83	4.03	2.73	4.63	2.82	5.31	12.75	16.90	18.05	42.75
	744	672	744	720	744	667	531	744	683	744	720	744	8457
	744	672	744	720	744	720	744	744	720	744	720	744	8760
TOTAL	11.310	13.623	16.645	19.030	23.715	26.784	28.030	27.688	26.078	21.756	19.420	13.768	20.624
	24.35	17.01	11.63	9.56	4.60	3.28	3.15	5.16	6.02	18.28	16.68	24.07	44.34
	2232	2016	2232	2107	2232	2107	2019	2232	2123	2198	1955	2214	25667
	2976	2016	2232	2160	2232	2160	2232	2232	2160	2232	2160	2232	35064

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S.W. PASS, LA      VARIABLE : AIR TEMPERATURE  C    DATES : 85/ 1/ 1: 1 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1985    10.079   12.342   17.761   20.433   24.378   26.465   26.825   28.567            25.053   20.771   12.431   19.790
         29.38    22.47     7.26     7.48     2.13     1.61     1.64      .97              2.77     6.07    23.56    47.70
           743      672      744      720      744      720      546      389               486      720      744     7228
           744      672      744      720      744      720      744      744               744      720      744     8760

1986    12.701   15.394   15.953   19.941   23.972   27.522   28.397   28.226   28.047   23.481   20.138   13.315   21.446
         12.01    18.24    16.21     3.44     2.34     1.30      .92     2.25      .70    11.21    10.49    10.46    40.74
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1987    11.555   14.308   15.145   18.355   24.762   26.743   28.439   28.995   26.933   20.990   18.976   16.846   21.119
         14.12     8.98    10.50    14.60     2.84      .99     1.52     1.06     2.37     4.80    11.97    17.20    42.58
           744      672      744      720      744      720      744      744      683      516      486      655     8172
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   11.446   14.015   16.286   19.576   24.371   26.910   27.990   28.601   27.504   23.182   20.082   14.087   20.840
         19.64    18.14    12.51     9.28     2.54     1.50     1.3      1.63     1.82     9.39     9.69    20.54    43.93
          2231     2016     2232     2160     2232     2160     2034     1877     1403     1746     1926     2143    24160
          2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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GRAND ISLE, LA     VARIABLE : AIR TEMPERATURE  C    DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL

1985     9.222   12.279   18.985   21.372   24.823   26.601   27.630   28.154   26.487   24.030   21.263   12.391   20.940
         35.83    25.76     5.95     8.47     3.30     2.62     1.83     2.12     3.79     7.24     5.91    26.10    50.68
           744      672      719      720      721      720      586      650      720      744      657      744     8397
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1986    12.713   15.623   16.812   20.381   24.940   27.858   28.306   28.014   28.058   22.945   19.799   12.987   21.489
         13.88    23.77    18.18     3.52     1.98     1.34     1.74     3.32      .95    12.48    16.89     9.86    42.76
           744      672      744      696      561      720      744      744      720      744      720      744     8553
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1987    11.156   14.378   14.632   19.693   25.095   26.807   28.279   28.859   26.752   20.225   17.562   15.855   21.002
         17.43     9.66     8.09    22.55     2.24     1.36     2.39     1.75     3.05     5.83    14.33    17.42    43.96
           744      672      413      703      695      720      744      744      683      744      720      744     8326
           744      672      744     7720      744      720      744      744      720      744      720      744     8760

TOTAL   11.030   14.093   17.165   20.490   24.952   27.089   28.105   28.351   27.105   22.400   19.490   13.744   21.146
         24.40    21.62    13.99    11.98     2.56      .07     2.09     2.55     3.06    11.07    14.85    20.06    45.84
          2232     2016     1876     2119     1977     2160     2074     2138     2123     2232     2097     2232    25276
          2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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SABINE PASS, TX   VARIABLE : AIR TEMPERATURE C   DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JLY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1985	7.868	9.273	17.225	20.698	24.131	26.344	27.058	27.704	25.736	21.676	19.482	10.706	19.883
	26.83	27.07	7.87	8.29	4.62	4.13	3.73	4.27	10.03	13.00	13.37	29.39	59.70
	744	672	744	720	744	720	744	744	720	744	580	744	8620
	744	672	744	720	744	720	744	744	720	744	720	744	8760
1986		13.351	16.501	20.319	23.428	27.273	28.466	27.474	27.626	21.013	16.874	10.531	20.697
		22.07	13.63	6.34	6.33	2.37	1.97	5.82	2.34	21.23	25.41	12.50	45.54
		672	744	720	744	720	208	744	720	744	720	744	7480
		672	744	720	744	720	744	744	720	744	720	744	8760
1987	9.945	12.404	14.586	17.179	24.172	26.846	27.836	28.560	25.457	19.755	15.690	13.110	18.767
	17.21	12.53	17.33	27.36	5.29	3.97	4.02	3.70	10.96	12.09	22.10	23.28	52.96
	744	672	744	461	744	230	291	744	683	744	720	744	7521
	744	672	744	720	744	720	744	744	720	744	720	744	8760
TOTAL	8.907	11.676	16.104	19.701	23.910	26.814	27.476	27.913	26.287	20.814	17.201	11.449	19.785
	23.08	23.57	14.17	14.22	5.52	3.53	3.80	4.81	8.65	16.06	23.10	23.09	53.67
	1488	2016	2232	1901	2232	1670	1243	2232	2123	2232	2020	2232	23621
	2976	2016	2232	2160	2232	2160	2232	2232	2160	2232	2160	2232	35064

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PORT ARANSAS, TX   VARIABLE : AIR TEMPERATURE  C    DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

             JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

1985        9.621   10.748   17.773   20.685   24.737   26.284   26.961   27.387   27.227   23.600   20.714   13.197   20.797
           32.00    28.92     5.29     4.75     1.39      .94      .45      .72     4.80     8.70    13.42    26.33    50.63
              744      672      744      475      744      720      744      744      720      744      720      744     8515
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1986       13.720   14.948   18.657   22.128   24.309   27.302   27.184   27.289   28.018   22.612   17.600   13.290   21.177
           14.45    16.94     4.55     1.19     2.41      .48      .39     1.10      .56     2.91    31.53    14.97    37.28
              744      672      744      720      744      720      744      744      437      393      720      744     8126
              744      672      744      720      744      720      744      744      720      744      720      744     8760

1987       13.148   14.862   16.036   19.009   24.514   26.797   28.059   28.314   26.885   23.490   18.649   15.595   20.977
           12.06    10.74    10.76    11.33     2.23     2.44      .60      .27     4.69     2.61    18.17    25.10    37.41
              744      672      744      720      744      720      744      556      452      744      720      744     8304
              744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL      12.163   13.519   17.489   20.598   24.520   26.794   27.401   27.603   27.346   23.350   19.014   14.027   20.981
           22.78    22.70     8.05     7.71     2.04     1.46      .71      .93     3.80     5.22    22.62    23.35    41.90
             2232     2016     2232     1915     2232     2160     2232     2044     1609     1881     2160     2232    24945
             2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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C.3.2 ATMOSPHERIC PRESSURE (mb - 1000.0)

312

313

ALLIGATOR REEF, FLA   VARIABLE : PRESSURE MB-1000   DATES : 86/ 1/ 1: 0 TO 87/12/ 4:15
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JULY	AUG	SEP	OCT	NOV	DEC	ANNUAL
1986	20.098	17.677	19.148	17.107	15.729		19.535	17.425	18.045	17.369	17.900	18.110	18.078
	10.41	11.90	13.93	7.16	6.02		3.[illegible]	2.87	2.99	3.11	4.33	7.61	7.99
	744	672	744	720	384		490	744	720	744	720	744	7426
	744	672	744	720	744		744	744	720	744	720	744	8760
1987	18.159	16.422	14.887	16.199	16.314	16.751	17.398	16.719	14.792	18.020	16.036	17.334	16.358
	18.07	13.66	11.15	7.28	1.41	2.40	1.62	4.20	2.79	1.88	13.34	11.15	8.30
	489	672	744	720	705	510	744	744	582	75	720	88	6793
	744	672	744	720	744	720	744	744	720	744	720	744	8760
TOTAL	19.329	17.049	17.018	16.653	16.108	16.751	18.247	17.072	16.591	17.429	16.968	18.028	17.256
	14.33	13.16	17.07	7.42	3.11	2.40	3.62	3.66	5.51	3.03	9.70	8.03	8.88
	1233	1344	1488	1440	1089	510	1234	1488	1302	819	1440	832	14219
	1488	1344	1488	1440	1488	1440	1488	1488	1440	1488	1440	1488	17520

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VENICE, FLA       VARIABLE : PRESSURE MB-1000      DATES : 87/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

1987    17.744   18.979   12.916   15.709   17.438   17.741   18.448   17.292   14.798   16.351   17.517   19.423   17.257
         22.18    17.82     3.56     8.97     1.79     3.98     2.62     4.71     4.40    14.95    18.74    17.51    12.07
           744      210      161      562      744      720      744      744      683      744      720      744     7520
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   17.744   18.979   12.916   15.709   17.438   17.741   18.448   17.292   14.798   16.351   17.517   19.423   17.257
         22.18    17.82     3.56     8.97     1.79     3.98     2.62     4.71     4.40    14.95    18.74    17.51    12.07
           744      210      161      562      744      720      744      744      683      744      720      744     7520
          1488      672      744      720      744      720      744      744      720      744      720      744    17544
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CAPE SAN BLAS, FLA  VARIABLE   PRESSURE MB-1000      DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL

1985    20.636   22.072   19.833   18.148   14.752   16.244   17.369   16.246   17.487   17.098   18.663   21.455   18.308
         24.56    21.87    21.95    10.03     7.11     4.03     6.33     9.69    17.58    21.06    24.23    25.49    20.73
           744      672      744      667      744      720      744      744      720      710      515      744     8468
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1986    21.017   15.651   19.201   16.538   14.690   16.344   18.243   16.359   18.872   19.180   18.304   20.267   17.906
         19.25    28.97    36.92    12.35     6.46     4.93     9.54     7.33     5.74     9.72    18.71    26.37    18.93
           744      672      744      720      744      720      744      744      720      744      720      726     8742
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1987    17.719   16.907   15.276   15.872   17.737   16.821   16.956   16.370   14.679   19.353   19.358   19.710   17.260
         24.65    30.40    32.03    14.17     3.09     8.12     5.13     9.40     5.20    17.80    22.75    25.31    19.27
           744      672      744      720      744      667      531      744      683      744      720      744     8457
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   19.791   18.210   18.103   16.820   15.726   16.461   17.582   16.325   17.053   18.566   18.787   20.479   17.826
         24.97    34.78    34.34    13.12     7.57     5.69     7.47     8.80    12.57    17.14    21.84    26.23    19.82
          2232     2016     2232     2107     2232     2107     2019     2232     2123     2198     1955     2214    25667
          2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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        S.W. PASS, LA     VARIABLE : PRESSURE MB-1000     DATES : 85/ 1/ 1: 1 TO 87/12/31:23
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN       FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP       OCT       NOV       DEC    ANNUAL

1985    21.492    21.442    19.037    18.040    14.519    16.324    17.534    15.229              11.884    17.252    22.159    18.023
         27.84     20.05     22.92     15.75      3.94      3.62      7.59      2.63               94.22     26.01     25.73     30.45
           743       672       744       720       744       720       546       389                 486       720       744      7228
           744       672       744       720       744       720       744       744                 744       720       744      8760

1986    21.687    16.658    20.267    18.048    15.410    15.793    18.414    16.150    17.893    18.437    17.805    20.032    18.068
         12.17     29.92     50.25      9.98      6.54      6.66      7.39      3.90      3.88      8.86     19.35     27.71     18.85
           744       672       744       720       744       720       744       744       720       744       720       744      8760
           744       672       744       720       744       720       744       744       720       744       720       744      8760

1987    18.661    16.325    15.205    16.706    16.503    16.020    17.557    16.736    15.096    19.954    18.801    18.459    17.053
         23.32     30.98     36.29     14.13      3.64      5.89      2.70      7.90      3.83      9.08     19.11     29.53     17.36
           744       672       744       720       744       720       744       744       683       516       486       655      8172
           744       672       744       720       744       720       744       744       720       744       720       744      8760

TOTAL   20.613    18.142    18.170    17.598    15.477    16.046    17.864    16.191    16.531    17.061    17.850    20.289    17.711
         23.00     32.43     41.10     13.67      5.36      5.43      5.90      5.53      5.81     43.38     22.12     29.81     22.03
          2231      2016      2232      2160      2232      2160      2034      1877      1403      1746      1926      2143     24160
          2976      2016      2232      2160      2232      2160      2232      2232      2160      2232      2160      2232     35064
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GRAND ISLE, LA     VARIABLE : PRESSURE MB-1000      DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1985    21.395   21.326   18.476   17.843   14.429   16.296   16.886   15.482   16.566   13.999   17.233   22.378   17.719
         31.21    20.76    22.37    17.29     4.11     3.49     6.92     5.34     8.33    76.77    26.89    27.73    28.53
           744      672      719      720      721      720      586      650      720      744      657      744     8397
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1986    21.921   16.119   19.631   17.334   14.117   16.057   18.517   15.949   17.625   18.421   17.639   20.122   17.888
         12.57    32.24    54.04    10.52     4.04     6.70     8.11     3.68     4.05    10.44    21.22    30.50    20.70
           744      672      744      696      561      720      744      744      720      744      720      744     8553
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1987    18.651   16.123   18.588   16.078   15.932   15.451   17.148   16.310   14.815   20.170   19.111   18.630   17.238
         24.11    34.22    31.54    14.41     4.03     6.27     2.84     8.29     4.08    11.42    20.82    30.64    18.15
           744      672      413      703      695      720      744      744      683      744      720      744     8326
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   20.656   17.856   18.959   17.090   14.869   15.934   17.565   15.933   16.362   17.530   18.017   20.377   17.618
         24.67    35.07    37.21    14.65     4.68     5.61     6.39     5.90     6.83    39.59    23.49    31.97    22.54
          2232     2016     1876     2119     1977     2160     2074     2138     2123     2232     2097     2232    25276
          2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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         SABINE PASS, TX   VARIABLE : PRESSURE MB-1000      DATES : 85/ 1/ 1: 0 TO 87/12/31:23
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC      ANNUAL

1985    22.379   21.957   18.064   17.039   14.056   15.464   16.936   15.775   16.093   14.476   17.279   22.702   17.670
         42.63    20.44    28.44    27.09     5.46     4.26     6.05     5.05     8.38    53.44    15.42    31.55    29.39
           744      672      744      720      744      720      744      744      720      744      580      744     8620
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1986             16.173   19.382   16.408   13.787   14.392   15.591   15.766   16.328   18.158   17.701   20.828   16.872
                  35.74    64.97     1.39     8.03     8.20     3.39     2.85     5.28    14.18    29.29    27.44    24.09
                    672      744      720      744      720      208      744      720      744      720      744     7400
                    672      744      720      744      720      744      744      720      744      720      744     8760

1987    19.030   16.019   15.492   19.427   15.012   14.921   16.520   15.714   15.116   20.518   19.217   17.979   17.193
         23.18    38.57    50.61     5.97     5.65     3.50     2.84     9.97     5.98     9.68    27.03    43.09    25.05
           744      672      744      461      744      230      291      744      683      744      720      744     7521
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   20.705   18.050   17.646   17.379   14.285   14.927   16.614   15.752   15.859   17.717   18.120   20.503   17.265
         35.69    39.19    50.57    17.80     6.65     6.09     5.09     5.95     6.82    31.93    25.17    37.77    26.56
          1488     2016     2232     1901     2232     1670     1243     2232     2123     2232     2020     2232    23621
          2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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FORT ARANSAS, TX   VARIABLE : PRESSURE MB-1000      DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1985   22.204   20.860   16.474   16.099   12.063   13.044   14.881   14.132   14.156   14.292   15.016   21.804   16.236
        49.05    24.77    29.67    42.18     7.97     5.45     5.92     3.80     6.68    18.41    19.24    31.74    31.01
          744      672      744      475      744      720      744      744      720      744      720      744     8515
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1986   21.948   15.261   17.959   14.365   12.286   13.687   17.157   15.073   15.319   19.437   17.725   20.488   16.687
        25.09    34.11    67.04    15.30    10.20     9.37     6.13     2.70     4.52    11.61    29.78    19.38    28.42
          744      672      744      720      744      720      744      744      437      393      720      744     8126
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1987   18.995   15.899   15.441   16.779   13.728   13.979   15.631   14.311   14.619   19.510   18.697   17.381   16.349
        25.80    37.15    57.72    24.02     7.56     4.79     1.89     8.45     8.56     8.28    31.65    53.51    26.91
          744      672      744      720      744      720      744      556      452      744      720      744     8304
          744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL  21.049   17.340   16.624   15.703   12.693   13.570   15.890   14.523   14.602   17.431   17.146   19.891   16.421
        35.41    38.24    52.50    26.36     9.11     6.68     5.54     4.84     6.84    19.42    29.29    30.28    20.83
         2232     2016     2232     1915     2232     2160     2232     2044     1609     1881     2160     2232    24945
         2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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C.3.3 SEA SURFACE TEMPERATURE (DEG C)

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ALLIGATOR REEF, FLA     VARIABLE : SST DEG C            DATES : 86/ 1/ 1: 0 TO 87/12/ 4:15
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

1986   22.367   22.804   22.851   24.327   26.599   28.516   29.690   29.525   29.347   28.313   27.073   25.428   26.423
          .97     2.48     3.81      .51      .35      .39      .28      .22      .11      .88      .11     1.40     8.01
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1987   23.097   22.773            23.074   26.511   28.260   29.512   30.231   30.320   25.249   25.380   25.192   26.637
          .94     1.48              1.12      .33      .68      .26      .16      .12      .24      .74      .18     8.94
          489      672               720      744      720      744      744      582       75      720       88     6298
          744      672               720      744      720      744      744      720      744      720      744     8760

TOTAL  22.657   22.789   22.851   23.700   26.555   28.388   29.601   29.878   29.782   28.032   26.226   25.403   26.512
         1.09     1.98     3.81     1.21      .34      .55      .28      .31      .35     1.60     1.14     1.28     8.41
         1233     1344      744     1440     1488     1440     1488     1488     1302      819     1440      832    15058
         1488     1344     1488     1440     1488     1440     1488     1488     1440     1488     1440     1488    17520
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GRAND ISLE, LA    VARIABLE : SST DEG C            DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

         JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

1985   12.167   13.716   20.050   22.442   26.608   28.286   29.116   29.472   27.648   25.300   22.117   14.165   22.430
        13.57     8.84     3.01     7.50     1.66     2.17      .79     1.77     2.98     3.45     2.17     9.73    41.24
          744      672      744      720      721      720      585      650      720      744      658      744     8422
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1986   13.715   16.714   18.177   22.247   26.529   29.958   29.982   29.833   29.373   24.286   21.031   14.943   23.089
         3.30     5.67     7.23     1.62     1.91      .50      .92     1.06      .53    11.20     6.19     3.57    38.46
          744      672      744      720      744      720      744      744      720      744      720      744     8760
          744      672      744      720      744      720      744      744      720      744      720      744     8760

1987   12.933   15.237   15.908   20.383   27.097   28.182   30.277   30.531   28.287   21.376   18.278   16.631   22.327
         5.30     2.21     1.37    12.75     1.74      .88     1.13     1.51     2.17     2.20     4.72     5.15    41.66
          744      672      413      698      695      720      744      744      683      744      720      744     8321
          744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL  12.938   15.222   18.417   21.704   26.738   28.808   29.843   29.966   28.439   23.654   20.427   15.246   22.623
         7.78     7.06     6.74     8.08     1.83     1.84     1.18     1.63     2.40     8.38     7.03     7.20    40.53
         2232     2016     1901     2138     2160     2160     2073     2138     2123     2232     2098     2232    25503
         2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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          VENICE, FLA      VARIABLE : SST DEG C            DATES : 87/ 1/ 1: 0 TO 87/12/31:23
          MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN       FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP       OCT       NOV       DEC       ANNUAL

1987     16.873    17.546    20.059    21.217    25.928    29.480    30.609    31.023    30.185    24.049    21.064    19.228    24.003
           1.20      1.14      1.24      1.64      2.69      1.46       .50       .54       .55      3.63       .89       .98     27.61
            744       672       733       562       744       720       744       744       683       744       720       744      8554
            744       672       744       720       744       720       744       744       720       744       720       744      8760

TOTAL    16.873    17.546    20.059    21.217    25.928    29.480    30.609    31.023    30.185    24.049    21.064    19.228    24.003
           1.20      1.14      1.24      1.64      2.69      1.46       .50       .54       .55      3.63       .89       .98     27.61
            744       672       733       562       744       720       744       744       683       744       720       744      8554
           1488       672       744       720       744       720       744       744       720       744       720       744     17544
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C.3.4 AIR - SEA SURFACE TEMPERATURE (DEG C)

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          ALLIGATOR REEF, FLA     VARIABLE : AIR - SST DEG C        DATES : 86/ 1/ 1: 0 TO 87/12/ 4:15
          MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN       FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP       OCT       NOV       DEC       ANNUAL

1986    -2.287    -1.083    -1.997    -1.720    -1.290    -1.147    -1.394    -1.301    -1.153    -1.465     -.655    -1.789    -1.446
          8.83      5.99      8.89      1.85       .42       .53       .41       .88       .31      1.27       .41      2.75      2.88
           744       672       744       720       744       720       744       744       720       744       720       744      8760
           744       672       744       720       744       720       744       744       720       744       720       744      8760

1987    -2.287    -1.076              -1.927    -1.035     -.769    -1.028    -1.364    -1.638    -1.943    -1.111    -5.348    -1.405
          9.44      3.30                6.16       .32       .44       .41       .44       .73      2.91      4.37       .68      3.09
           489       672                 720       705       510       744       744       582        75       720        88      6049
           744       672                 720       744       720       744       744       720       744       720       744      8760

TOTAL   -2.287    -1.079    -1.997    -1.824    -1.166     -.991    -1.211    -1.332    -1.370    -1.508     -.883    -2.165    -1.429
          9.06      4.64      8.89      4.01       .38       .52       .44       .66       .55      1.44      2.44      3.73      2.97
          1233      1344       744      1440      1449      1230      1488      1488      1302       819      1440       832     14809
          1488      1344      1488      1440      1488      1440      1488      1488      1440      1488      1440      1488     17520
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GRAND ISLE, LA     VARIABLE : AIR - SST DEG C       DATES : 85/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC     ANNUAL

1985    -2.945   -1.437   -1.121   -1.071   -1.785   -1.685   -1.486   -1.317   -1.161   -1.270    -.860   -1.774   -1.504
         16.24    10.72     3.40     1.37     1.59     1.46     1.57     1.92     1.96     2.40     3.24    14.55     5.42
           744      672      719      720      721      720      585      650      720      744      657      744     8396
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1986    -1.002   -1.067   -1.364   -1.783   -2.003   -2.100   -1.676   -1.819   -1.315   -1.341   -1.232   -1.956   -1.558
          7.23    11.15     5.92     1.40     1.04     1.28     1.50     2.18      .89     3.00     7.39     5.65     4.13
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1987    -1.777    -.859   -1.275    -.656   -2.002   -1.375   -1.998   -1.672   -1.535   -1.151    -.716    -.776   -1.321
          8.79     5.75     4.64     4.67      .96     1.20     1.60     1.39     1.25     3.46     8.15     9.04     4.47
           744      672      413      698      695      720      744      744      683      744      720      744     8321
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   -1.908   -1.121   -1.251   -1.175   -1.930   -1.720   -1.738   -1.615   -1.333   -1.254    -.938   -1.502   -1.463
         11.38     9.26     4.68     2.67     1.21     1.40     1.60     1.87     1.39     2.96     6.39    10.01     4.68
          2232     2016     1876     2138     2160     2160     2073     2138     2123     2232     2097     2232    25477
          2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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VENICE, FLA       VARIABLE : AIR - SST DEG C       DATES : 87/ 1/ 1: 0 TO 87/12/31:23
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1987   -1.286   -1.195    -.278   -1.138   -2.253   -3.075   -3.426   -3.186   -3.531   -2.444    -.802   -1.470   -2.208
        10.54    13.76     3.48     2.33     5.33     3.96     4.36     3.83     4.20     8.74    13.60    15.97     8.51
          744      210      161      562      744      720      744      744      683      744      720      744     7520
          744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL  -1.286   -1.195    -.278   -1.138   -2.253   -3.075   -3.426   -3.186   -3.531   -2.444    -.802   -1.470   -2.208
        10.54    13.76     3.48     2.33     5.33     3.96     4.36     3.83     4.20     8.74    13.60    15.97     8.51
          744      210      161      562      744      720      744      744      683      744      720      744     7520
         1488      672      744      720      744      720      744      744      720      744      720      744    17544
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C.3.5 SENSIBLE HEAT FLUX, QH, (Wm^{-2})

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ALLIGATOR REEF, FLA     VARIABLE : QH W/M**2            DATES : 86/ 1/ 1: 0 TO 87/12/ 4:15
MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

          JAN       FEB       MAR       APR       MAY       JUN       JLY       AUG       SEP       OCT       NOV       DEC    ANNUAL

1986   23.352    11.857    22.234    14.338    14.156     9.466    10.603    13.008    10.485    13.920     5.832    12.445    13.526
      1920.22   1185.30   2632.95    312.42     79.84     71.36     78.76    240.47     32.11    277.00     40.23    336.62    614.70
          744       672       744       720       744       720       744       744       720       744       720       744      8760
          744       672       744       720       744       720       744       744       720       744       720       744      8760

1987   25.860     9.773              16.886    10.492     7.453     9.300    11.501    10.980    14.191    15.154    50.722    13.370
      1517.08    500.59             1003.11     46.19     40.60     90.36     70.92    101.67    339.97   1262.02    784.93    544.21
          489       672                 720       705       510       744       744       582        75       720        88      6049
          744       672                 720       744       720       744       744       720       744       720       744      8760

TOTAL  24.347    10.815    22.234    15.612    12.373     8.631     9.951    12.255    10.706    13.945    10.493    16.494    13.462
      1700.17    843.41   2632.95    658.94     66.78     59.55     84.92    156.16     63.21    282.37    672.42    521.90    585.88
         1233      1344       744      1440      1449      1230      1488      1488      1302       819      1440       832     14809
         1488      1344      1488      1440      1488      1440      1488      1488      1440      1488      1440      1488     17520
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        GRAND ISLE, LA    VARIABLE : QH W/M**2            DATES : 85/ 1/ 1: 0 TO 87/12/31:23
        MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR      APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC   ANNUAL

1985    48.941   24.796   12.470    9.337   13.369   11.412    7.701    9.060   10.282   13.984   12.004   29.053   17.190
       6203.26  2069.01   526.04   164.18   182.83   101.26    55.29   182.70   247.35   480.20   512.92  2843.30  1307.57
           744      672      719      720      720      720      585      650      720      744      657      744     8395
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1986    16.321   17.899   14.041   12.882   15.845   13.577   10.770   12.374    8.715   10.379   17.823   21.065   14.290
        885.56  2327.69  1212.21   141.44   115.72   132.19    79.50   205.91    49.67   298.53  1343.52   658.54   620.19
           744      672      744      720      744      720      744      744      720      744      720      744     8760
           744      672      744      720      744      720      744      744      720      744      720      744     8760

1987    23.621   11.111   11.548    8.215   11.543   10.090   12.308    9.763   10.765   15.171   15.840   17.491   13.257
       1334.67   560.35   492.79   579.87    69.76    86.80   187.32    74.17   125.96   633.41  1372.74  1990.19   654.84
           744      672      413      698      695      720      744      744      683      744      720      744     8321
           744      672      744      720      744      720      744      744      720      744      720      744     8760

TOTAL   29.628   17.935   12.890   10.164   13.634   11.693   10.456   10.458    9.906   13.178   15.319   22.536   14.908
       3000.78  1681.94   791.07   295.92   126.31   108.72   114.67   154.91   141.89   474.45  1098.00  1852.41   860.69
          2232     2016     1876     2138     2159     2160     2073     2138     2123     2232     2097     2232    25476
          2976     2016     2232     2160     2232     2160     2232     2232     2160     2232     2160     2232    35064
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         VENICE, FLA      VARIABLE : DH W/M**2           DATES : 87/ 1/ 1: 0 TO 87/12/31:23
         MEAN/VARIANCE/NO. OF DATA POINTS/NO. OF POINTS IN MONTH

           JAN      FEB      MAR       APR      MAY      JUN      JLY      AUG      SEP      OCT      NOV      DEC    ANNUAL

 1987   14.436   10.209    6.418     7.575   14.407   19.905   20.286   18.705   20.843   22.614   12.319   16.850   16.583
        972.58   615.76   673.56     96.68   202.73   198.41   247.50   255.13   280.88   805.91  1063.83  1301.35   569.20
           744      210      161       562      744      720      744      744      683      744      720      744     7520
           744      672      744       720      744      720      744      744      720      744      720      744     8760

 TOTAL  14.436   10.209    6.418     7.575   14.407   19.905   20.286   18.705   20.843   22.614   12.319   16.850   16.583
        972.58   615.76   673.56     96.68   202.73   198.41   247.50   255.13   280.88   805.91  1063.83  1301.35   569.20
           744      210      161       562      744      720      744      744      683      744      720      744     7520
          1488      672      744       720      744      720      744      744      720      744      720      744    17544
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APPENDIX D

WIND SPEED AND DIRECTION FREQUENCY DISTRIBUTION TABLES

D.1

WINTER SEASON (DECEMBER - MARCH)

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D.1.1 NATIONAL WEATHER SERVICE (NWS) COASTAL STATIONS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: KEY WEST          SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986    49463 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                     PERCENT   MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                      SPEED   SPEED  SPEED

  0- 30     .5  2.9  5.1  4.7  2.2   .6   .1   .0   .0   .0   .0   .0   .0                          16.2     5.90    .37   15.43       2.54
 30- 60     .5  3.9  6.1  4.5  1.2   .2   .0   .0   .0   .0   .0   .0   .0                          16.4     5.28    .48   13.37       2.18
 60- 90     .4  2.9  4.6  2.9   .5   .0   .0   .0   .0   .0   .0   .0   .0                          11.5     5.00    .26   12.31       2.00
 90-120     .3  2.5  5.4  5.0  1.2   .1   .0   .0   .0   .0   .0   .0   .0                          14.5     5.57    .54   16.96       2.04
120-150     .3  3.0  5.1  3.8   .8   .1   .0   .0   .0   .0   .0   .0   .0                          13.0     5.26    .17   15.42       2.05
150-180     .3  2.3  2.7  1.3   .3   .1   .0   .0   .0   .0   .0   .0   .0                           6.9     4.66    .26   13.37       2.13
180-210     .2  1.1  1.1   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                           3.1     4.70    .45   13.37       2.17
210-240     .2  1.4  1.1   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                           3.1     4.14    .24   12.86       2.01
240-270     .2   .7   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           1.6     4.04    .26   17.48       2.17
270-300     .1   .6   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                           1.5     4.42    .51   12.15       2.39
300-330     .2   .8   .9   .9   .5   .2   .1   .0   .0   .0   .0   .0   .0                           3.5     5.75    .34   13.89       2.78
330-360     .3  1.3  1.9  2.0  1.1   .4   .1   .0   .0   .0   .0   .0   .0                           7.1     6.01    .40   16.98       2.60
CALM       1.5                                                                                       1.5

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    5.1 23.3 34.9 26.5  8.2  1.6   .3   .1   .0   .0   .0   .0                              100.00
MEAN DIR   149  133  118  116  126  150  151   79  243    0    0    0    0
STD DEV    104   92   87   93  117  141  148  128   93    0    0    0    0
                                         SUMMARY STATISTICS

MEAN SPEED =   5.25 M/S           MAXIMUM =  17.48 M/S           MINIMUM =   .00 M/S           RANGE =  17.48 M/S
           STANDARD DEVIATION =  2.20 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.19 M/S          STANDARD DEVIATION =   3.17 /S
MEAN Y COMPONENT =   -.85 M/S          STANDARD DEVIATION =   4.10 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: FT.MEYER            SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986     49463 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                               PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                                 SPEED   SPEED  SPEED

  0- 30     .9  5.6  5.1  1.8   .2   .0   .0   .0   .0   .0   .0   .0   .0                                    13.8     4.09     .37  22.12      2.13
 30- 60    1.1  611  3.1  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    11.7     3.68     .17  11.31      1.97
 60- 90    1.1  5.1  2.5  1.0   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     9.8     3.66     .34  12.86      1.99
 90-120    1.2  4.6  2.4   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     9.3     3.59     .36  10.29      2.03
120-150     .9  3.2  2.0   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     6.8     3.66     .18  13.36      2.02
150-180     .7  3.2  2.1  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                                     7.4     4.01     .34  11.32      2.22
180-210     .4  1.8  2.0  1.4   .2   .0   .0   .0   .0   .0   .0   .0   .0                                     5.8     4.63     .43  11.83      2.16
210-240     .5  2.0  2.0  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0                                     5.7     4.33     .17  11.32      2.21
240-270     .2   .8   .7   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     2.1     4.11     .24  12.86      2.14
270-300     .4  1.6  1.3   .8   .2   .1   .0   .0   .0   .0   .0   .0   .0                                     4.4     4.64     .17  14.40      2.54
300-330     .5  2.2  2.0  1.6   .5   .1   .0   .0   .0   .0   .0   .0   .0                                     7.1     4.90     .34  15.93      2.60
330-360     .5  2.7  2.9  1.4   .2   .0   .0   .0   .0   .0   .0   .0   .0                                     7.8     4.41     .34  16.86      2.11
CALM       8.6                                                                                                 8.6

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   17.0 30.9 20.4 12.9  2.3   .4   .1   .0   .0   .0   .0   .0   .0                                   99.99
MEAN DIR   144  137  154  175  208  256  266  285  180    0    0    0    0
STD DEV     96  101  112  113  109   92  104  134  234    0    0    0    0

                                                     SUMMARY STATISTICS

MEAN SPEED =   3.72 M/S              MAXIMUM =  22.12 M/S            MINIMUM =   .00 M/S              RANGE =  22.12 M/S
            STANDARD DEVIATION =  2.14 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.46 M/S           STANDARD DEVIATION =   2.82 M/S
MEAN Y COMPONENT =   -.45 M/S           STANDARD DEVIATION =   3.16 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: TAMPA             SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986     49464 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                 PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                   SPEED   SPEED  SPEED

  0- 30      .6  5.9  4.3  1.5   .1   .0   .0   .0   .0   .0   .0   .0   .0                     12.4     3.94    1.03   10.29      2.01
 30- 60      .8  5.6  3.7  1.0   .1   .0   .0   .0   .0   .0   .0   .0   .0                     11.2     3.73     .51    9.77      1.98
 60- 90      .9  6.7  3.1   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0                     11.5     3.45    1.03   11.82      1.87
 90-120      .6  4.2  2.6   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0                      8.1     3.65     .51   14.39      1.93
120-150      .5  3.8  3.2  1.0   .1   .0   .0   .0   .0   .0   .0   .0   .0                      8.5     3.97    1.03   11.83      1.99
150-180      .3  2.8  2.2   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                      6.2     4.02    1.03   13.37      2.03
180-210      .2  2.1  2.3  1.0   .1   .0   .0   .0   .0   .0   .0   .0   .0                      5.6     4.44    1.03   15.43      2.09
210-240      .3  2.9  2.0   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                      5.8     3.87    1.03   11.83      1.96
240-270      .2  1.3  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                      2.8     3.90    1.03   12.34      1.99
270-300      .3  2.2  2.1  1.1   .3   .1   .0   .0   .0   .0   .0   .0   .0                      6.0     4.63    1.03   15.43      2.41
300-330      .4  2.9  2.1  1.6   .5   .1   .0   .0   .0   .0   .0   .0   .0                      7.6     4.77    1.03   16.46      2.58
330-360      .3  2.9  2.6  1.6   .4   .1   .0   .0   .0   .0   .0   .0   .0                      7.8     4.60     .51   11.83      2.32
CALM        6.3                                                                                  6.3

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    11.8 43.1 31.4 11.4  1.8   .4   .1   .0   .0   .0   .0   .0   .0                    100.00
MEAN DIR    143  144  157  186  251  286  267  250  300    0    0    0    0
STD DEV     100  102  106  117  112   80   82   98    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   3.78 M/S             MAXIMUM =  16.46 M/S            MINIMUM =   .00 M/S             RANGE =  16.46 M/S
            STANDARD DEVIATION =  1.95 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED    .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.36 M/S            STANDARD DEVIATION =   2.91 M/S
MEAN Y COMPONENT =   -.37 M/S            STANDARD DEVIATION =   3.06 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PENSACOL          SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986     49464 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                    PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                      SPEED   SPEED  SPEED

  0- 30      .9  6.6  5.6  2.2   .3   .0   .0   .0   .0   .0   .0   .0   .0                         15.5      4.17    .34   12.86     2.01
 30- 60      .6  4.5  2.2   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                          7.6      3.46    .51   12.85     1.67
 60- 90      .5  4.1  2.2   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                          7.3      3.65    .40   13.36     1.76
 90-120      .5  3.6  3.4  1.8   .3   .0   .0   .0   .0   .0   .0   .0   .0                          9.7      4.47    .28   12.86     2.10
120-150      .4  2.7  3.0  1.5   .3   .1   .0   .0   .0   .0   .0   .0   .0                          7.9      4.63    .17   14.39     2.08
150-180      .5  2.3  2.4  1.3   .3   .0   .0   .0   .0   .0   .0   .0   .0                          6.8      4.52    .34   15.42     2.20
180-210      .3  1.5  1.5   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0                          4.2      4.51    .17   11.83     2.12
210-240      .5  2.8  2.3  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                          6.9      4.23    .00   12.86     2.21
240-270      .2  1.7  1.3   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                          3.9      4.23    .34   13.51     2.11
270-300      .4  2.1  1.3   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                          4.5      4.07    .34   15.43     2.15
300-330      .5  2.6  2.0  1.4   .4   .1   .0   .0   .0   .0   .0   .0   .0                          7.0      4.56    .34   18.52     2.41
330-360      .6  4.8  4.1  3.2   .8   .1   .0   .0   .0   .0   .0   .0   .0                         13.7      4.76    .51   14.40     2.35
CALM        4.9                                                                                       4.9

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    10.8 39.1 31.3 15.3  3.0   .4   .0   .0   .0   .0   .0   .0   .0                        100.00
MEAN DIR    166  157  162  195  221  226  201  230    0  310    0    0    0
STD DEV     111  115  113  117  113   97   96  107    0    0    0    0    0

                                             SUMMARY STATISTICS

MEAN SPEED =   4.08 M/S              MAXIMUM =  18.52 M/S           MINIMUM =   .00 M/S             RANGE =  18.52 M/S
            STANDARD DEVIATION =  2.06 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.28 M/S           STANDARD DEVIATION =   2.91 M/S
MEAN Y COMPONENT =    -.57 M/S           STANDARD DEVIATION =   3.47 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: MOBILE              SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986     49464 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                            SPEED   SPEED  SPEED

  0- 30      .6  4.6  5.8  3.0   .7   .1   .0   .0   .0   .0   .0   .0   .0                              14.8      4.74    .34   13.37      2.19
 30- 60      .6  4.8  2.9   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                               9.1      3.74    .17   13.88      1.91
 60- 90      .5  2.9  1.6   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                               5.5      3.71    .37   13.89      1.94
 90-120      .4  2.9  2.4  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0                               7.0      4.24    .34   15.43      2.17
120-150      .5  3.7  3.5  2.1   .8   .2   .0   .0   .0   .0   .0   .0   .0                              10.9      4.84    .34   15.42      2.45
150-180      .6  3.7  3.0  1.8   .7   .2   .0   .0   .0   .0   .0   .0   .0                               9.9      4.67    .17   23.66      2.53
180-210      .3  1.9  2.0  1.2   .4   .1   .0   .0   .0   .0   .0   .0   .0                               5.8      4.79    .37   13.37      2.34
210-240      .6  3.1  2.4  1.2   .3   .1   .0   .0   .0   .0   .0   .0   .0                               7.7      4.34    .51   22.63      2.32
240-270      .3  1.5   .7   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                               2.8      3.65    .24   11.31      2.05
270-300      .5  2.1  1.1   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                               4.4      3.82    .51   12.34      2.23
300-330      .6  3.3  2.6  1.7   .7   .1   .0   .0   .0   .0   .0   .0   .0                               8.9      4.63    .34   13.37      2.48
330-360      .5  2.9  3.3  2.6   .9   .2   .0   .0   .0   .0   .0   .0   .0                              10.4      5.09    .34   13.89      2.46
CALM        2.8                                                                                             2.8

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     8.8 37.4 31.3 16.4  5.1   .9   .2   .0   .0   .0   .0   .0   .0                             100.00
MEAN DIR    173  162  158  179  194  197  169  156    0  179    0  205    0
STD DEV     106  106  111  116  112  101   80   61    0   99    0   79    0

                                                 SUMMARY STATISTICS

MEAN SPEED =   4.35 M/S              MAXIMUM =  23.66 M/S          MINIMUM =   .00 M/S            RANGE =  23.66 M/S
           STANDARD DEVIATION =  2.15 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.25 M/S           STANDARD DEVIATION =  2.87 M/S
MEAN Y COMPONENT =   -.26 M/S           STANDARD DEVIATION =  3.90 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA         STATION: BOOTHVL            SPANNING 12/ 1  TO  3/31 YEARS: 1971 - 1986    34931 DATA POINTS -  78.6 PERCENT OF TOTAL

DIRECTION FROM                                                                                     PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                      SPEED   SPEED  SPEED

  0- 30      .9  4.0  4.5  3.7  1.3   .5   .0   .0   .0   .0   .0   .0   .0                          15.1      5.22    .17   14.92      2.57
 30- 60      .8  3.9  3.9  2.6   .8   .2   .0   .0   .0   .0   .0   .0   .0                          12.3      4.82    .17   12.50      2.35
 60- 90     1.0  3.3  2.4  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                           8.1      4.00    .00   15.43      2.19
 90-120     1.2  4.4  2.4   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                           8.7      3.52    .24   12.86      1.83
120-150     1.0  4.8  4.0  1.6   .2   .0   .0   .0   .0   .0   .0   .0   .0                          11.7      4.13    .29   14.39      2.02
150-180      .8  3.8  4.0  2.0   .8   .1   .0   .0   .0   .0   .0   .0   .0                          11.5      4.69    .17    1.93      2.30
180-210      .5  1.8  1.6   .8   .3   .0   .0   .0   .0   .0   .0   .0   .0                           5.0      4.44    .26   14.08      2.26
210-240      .5  1.4  1.2   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0                           4.0      4.35    .34   11.82      2.32
240-270      .3   .8   .9   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                           2.5      4.50    .26   14.40      2.33
270-300      .4  1.3  1.1   .7   .3   .1   .0   .0   .0   .0   .0   .0   .0                           3.9      4.66    .26   15.43      2.68
300-330      .5  2.0  1.6  1.2   .5   .1   .1   .0   .0   .0   .0   .0   .0                           6.0      4.87    .24   15.43      2.68
330-360      .4  2.1  2.2  1.9  1.0   .2   .1   .0   .0   .0   .0   .0   .0                           8.0      5.45    .05   15.43      2.69
CALM        3.2                                                                                      3.2

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    11.6 33.7 29.9 17.1  5.9  1.4   .3   .1   .0   .0   .0   .0   .0                         100.00
MEAN DIR    148  145  144  145  163  146  250  248    0    0    0    0    0
STD DEV      96   96  100  114  126  134  132  104    0    0    0    0    0

                                                 SUMMARY STATISTICS

MEAN SPEED =   4.45 M/S              MAXIMUM =  15.93 M/S           MINIMUM =   .00 M/S             RANGE =  15.93 M/S
           STANDARD DEVIATION =  2.34 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.05 M/S           STANDARD DEVIATION =   2.97 M/S
MEAN Y COMPONENT =    -.52 M/S           STANDARD DEVIATION =   3.93 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PT.ARTHU          SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986    49464 DATA POINS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                 PERCENT   MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                  SPEED  SPEED  SPEED

  0- 30     .6  4.2  4.9  3.1   .7   .1   .0   .0   .0   .0   .0   .0   .0                      13.5     4.84    .31   16.45       2.19
 30- 60     .4  2.7  3.1  1.6   .2   .0   .0   .0   .0   .0   .0   .0   .0                       8.1     4.56    .20   15.42       2.08
 60- 90     .5  3.0  3.1  1.4   .3   .0   .0   .0   .0   .0   .0   .0   .0                       8.3     4.47    .17   13.37       2.07
 90-120     .5  3.3  3.9  1.9   .3   .0   .0   .0   .0   .0   .0   .0   .0                      10.0     4.61    .34   13.37       2.05
120-150     .4  2.3  3.1  2.5  1.0   .2   .0   .0   .0   .0   .0   .0   .0                       9.6     5.39    .17   14.39       2.45
150-180     .5  3.4  4.4  3.2  1.1   .2   .0   .0   .0   .0   .0   .0   .0                      12.9     5.20    .31   13.89       2.33
180-210     .5  2.0  2.0  1.4   .5   .0   .0   .0   .0   .0   .0   .0   .0                       6.4     4.79    .17   12.35       2.29
210-240     .6  2.7  1.4   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0                       5.6     3.96    .24   22.63       2.21
240-270     .4  1.3   .7   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                       2.7     3.84    .12   14.40       2.22
270-300     .4  1.7  1.1   .5   .2   .1   .0   .0   .0   .0   .0   .0   .0                       4.1     4.25    .27   13.88       2.31
300-330     .4  1.9  2.1  1.6   .7   .2   .0   .0   .0   .0   .0   .0   .0                       6.8     5.19    .24   13.09       2.51
330-360     .5  2.3  2.9  2.8   .8   .2   .0   .0   .0   .0   .0   .0   .0                       9.6     5.33    .18   12.86       2.39
CALM       2.4                                                                                   2.4

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    8.2 30.8 32.5 21.1  6.0  1.2   .2   .0   .0   .0   .0   .0   .0                     100.00
MEAN DIR   176  158  150  164  182  201  190  150   10    0  230  210    0
STD DEV    103  102  103  108  106  105   96   94    0    0    0    0    0

                                                     SUMMARY STATISTICS

MEAN SPEED =   4.71 M/S             MAXIMUM =  22.63 M/S            MINIMUM =   .00 M/S              RANGE =  22.63 M/S
           STANDARD DEVIATION =  2.21 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.77 M/S           STANDARD DEVIATION =   3.14 M/S
MEAN Y COMPONENT =   -.04 M/S           STANDARD DEVIATION =   4.08 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA         STATION: CORPUS           SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986     49464 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                       PERCENT    MEAN    MIN    MAX       STD. DEV.
DEGREES                                                                                                         SPEED  SPEED  SPEED

   0- 30      .4  3.6  5.9  6.1  3.4   .8   .1   .0   .0   .0   .0   .0   .0                          20.3      6.06    .24  16.46        2.53
  30- 60      .3  2.3  3.2  3.0  1.4   .3   .0   .0   .0   .0   .0   .0   .0                          10.4      5.64    .34  14.40        2.42
  60- 90      .3  1.9  2.3  1.4   .5   .0   .0   .0   .0   .0   .0   .0   .0                           6.5      4.93    .42  11.83        2.23
  90-120      .3  2.6  2.1  1.3   .3   .0   .0   .0   .0   .0   .0   .0   .0                           6.7      4.60    .00  15.95        2.13
 120-150      .4  3.3  4.5  4.7  3.4  1.1   .3   .0   .0   .0   .0   .0   .0                          17.7      6.33    .26  18.52        2.73
 150-180      .4  2.2  3.7  4.0  3.2  1.5   .4   .1   .0   .0   .0   .0   .0                          15.4      6.74    .28  16.98        2.87
 180-210      .2   .9   .8   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0                           2.6      4.74    .26  12.86        2.49
 210-240      .3  1.1   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           2.3      3.70    .17  12.85        2.00
 240-270      .2   .6   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                           1.1      3.48    .28  15.42        2.25
 270-300      .2  1.0   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                           1.8      3.82    .17  14.40        2.36
 300-330      .3  1.4  1.1   .9   .5   .3   .1   .0   .0   .0   .0   .0   .0                           4.5      5.49    .17  17.48        3.09
 330-360      .3  2.0  2.5  2.3  1.6   .5   .1   .0   .0   .0   .0   .0   .0                           9.4      5.99    .34  14.92        2.74
 CALM        1.3                                                                                         1.3

  SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
  M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

 PERCENT     4.9 22.8 27.4 24.6 14.6  4.6  1.0   .2   .0   .0   .0   .0   .0                         100.00
 MEAN DIR    167  149  129  125  135  156  166  198  190  150    0    0    0
 STD DEV     106  104  101  100  101   99   91   86   95    0    0    0    0

                                                SUMMARY STATISTICS

 MEAN SPEED =    5.73 M/S              MAXIMUM =  18.52 M/S            MINIMUM =    .00 M/S             RANGE =  18.52 M/S
           STANDARD DEVIATION =  2.63 M/S

 IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
 MEAN X COMPONENT =  -1.76 M/S             STANDARD DEVIATION =   2.93 M/S
 MEAN Y COMPONENT =   -.21 M/S             STANDARD DEVIATION =   5.29 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BROWNSV          SPANNING 12/ 1  TO  3/31 YEARS: 1969 - 1986    49464 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                     PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                      SPEED   SPEED  SPEED

  0- 30       .8  3.7  3.2  2.6   .9   .2   .0   .0   .0   .0   .0   .0   .0                         11.4      4.83     .51  13.37       2.52
 30- 60       .5  2.4  1.8  1.1   .1   .0   .0   .0   .0   .0   .0   .0   .0                          6.0      4.21     .20  12.86       2.18
 60- 90       .4  2.0  1.1   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                          4.0      3.70     .51  12.35       1.95
 90-120       .5  2.6  1.8   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                          5.9      4.04     .17  11.83       2.13
120-150       .6  4.3  4.1  3.6  1.8   .5   .1   .0   .0   .0   .0   .0   .0                         15.0      5.37     .37  13.89       2.67
150-180       .5  3.4  5.0  5.3  4.0  2.1   .9   .1   .0   .0   .0   .0   .0                         21.3      6.73     .20  18.52       3.07
180-210       .3   .8   .9   .8   .5   .3   .1   .0   .0   .0   .0   .0   .0                          3.6      5.83     .34  14.40       3.16
210-240       .4   .8   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                          1.6      3.10     .24  15.93       2.00
240-270       .2   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                           .8      2.90     .17  15.95       1.92
270-300       .3   .9   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                          1.6      3.19     .00  10.79       1.84
300-330       .5  2.8  2.6  1.5   .4   .1   .0   .0   .0   .0   .0   .0   .0                          7.9      4.59     .43  18.00       2.42
330-360       .7  4.1  4.8  4.7  1.8   .5   .1   .0   .0   .0   .0   .0   .0                         16.6      5.44     .17  15.43       2.57
CALM         4.3                                                                                      4.3

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      9.9 28.4 26.2 21.0  9.5  3.7  1.2   .1   .0   .0   .0   .0   .0                       100.00
MEAN DIR     167  168  178  184  186  184  182  188  171  235    0    0    0
STD DEV      110  112  112  111   92   68   32   37   51  126    0    0    0

                                           SUMMARY STATISTICS

MEA SPEED =   5.03 M/S             MAXIMUM =  18.52 M/S           MINIMUM =   .00 M/S              RANGE =  18.52 M/S
           STANDARD DEVIATION =  2.75 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.73 M/S           STANDARD DEVIATION =   2.59 M/S
MEAN Y COMPONENT =    .52 M/S           STANDARD DEVIATION =   5.03 M/S
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D.1.2 NATIONAL DATA BUOY CENTER (NDBC) BUOYS AND PLATFORMS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42001               SPANNING 12/ 1  TO  3/31 YEARS: 1976 - 1986     24522 DATA POINTS -  82.4 PERCENT OF TOTAL

DIRECTION FROM                                                                                   PERCENT   MEAN   MIN    MAX     STD. DEV.
DEGREES                                                                                                    SPEED  SPEED  SPEED

  0- 30      .5  1.2  2.3  2.7  2.1  1.3   .7   .2   .0   .0   .0   .0   .0                       10.9     7.25   .06   17.00     3.13
 30- 60      .6  1.7  3.2  3.5  2.4  1.5   .3   .1   .0   .0   .0   .0   .0                       13.3     6.73   .02   17.20     2.92
 60- 90      .8  2.4  3.3  3.3  1.9   .6   .2   .0   .0   .0   .0   .0   .0                       12.6     5.95   .06   18.45     2.75
 90-120      .7  1.9  3.1  3.3  1.7   .6   .1   .0   .0   .0   .0   .0   .0                       11.4     5.98   .03   21.00     2.73
120-150      .6  2.0  3.5  3.5  2.1  1.2   .5   .2   .0   .0   .0   .0   .0                       13.5     6.63   .14   20.79     3.01
150-180      .5  1.1  2.6  2.4  1.5  1.2   .4   .1   .0   .0   .0   .0   .0                        9.8     6.90   .12   20.32     3.3
180-210      .2   .8  1.2  1.5   .9   .4   .1   .0   .0   .0   .0   .0   .0                        5.1     6.48   .16   19.07     2.96
210-240      .2   .5   .6   .6   .4   .2   .1   .0   .0   .0   .0   .0   .0                        2.7     6.12   .06   15.99     3.06
240-270      .2   .5   .4   .4   .3   .1   .1   .0   .0   .0   .0   .0   .0                        2.0     6.07   .19   19.61     3.67
270-300      .2   .5   .6   .6   .5   .4   .3   .1   .1   .0   .0   .0   .0                        3.3     7.56   .13   20.07     4.09
300-330      .3   .7   .8  1.0  1.3  1.0   .6   .3   .1   .0   .0   .0   .0                        6.1     8.19   .15   19.34     3.93
330-360      .4   .9  1.6  1.9  1.6  1.1   .8   .1   .0   .0   .0   .0   .0                        8.6     7.51   .13   17.10     3.40
CALM         .8                                                                                    .8

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT     6.1 14.3 23.1 24.7 16.6  9.4  4.1  1.2   .4   .1   .0   .0   .0                     100.00
MEAN DIR    148  141  133  135  146  158  189  200  228  255  171    0    0
STD DEV     102   96   93   97  108  114  126  118  104   63   82    0    0

                                        SUMMARY STATISTICS

MEAN SPEED =   6.70 M/S             MAXIMUM =  21.00 M/S            MINIMUM =   .00 M/S              RANGE =  21.00 M/S
          STANDARD DEVIATION =  3.18 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.96 M/S            STANDARD DEVIATION =   4.51 M/S
MEAN Y COMPONENT =   -.71 M/S            STANDARD DEVIATION =   5.50 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42002               SPANNING 12/ 1  TO  3/31 YEARS: 1976 - 1986     28636 DATA POINTS -  96.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN    MIN     MAX      STD. DEV.
DEGREES                                                                                                             SPEED   SPEED   SPEED

  0- 30     .4  1.0  1.8  2.5  2.3  1.8  1.0   .3   .1   .0   .0   .0   .0                                11.1      7.99    .07   18.05      3.42
 30- 60     .4  1.4  2.2  2.5  2.5  1.3   .4   .1   .0   .0   .0   .0   .0                                10.9      7.14    .14   17.89      3.05
 60- 90     .6  1.8  2.5  2.6  1.8   .9   .3   .0   .0   .0   .0   .0   .0                                10.4      6.37    .15   18.32      2.98
 90-120     .6  2.0  3.3  3.5  2.2   .8   .4   .0   .0   .0   .0   .0   .0                                12.9      6.41    .07   20.02      2.86
120-150     .6  2.0  4.6  5.5  3.3  1.8   .5   .2   .0   .0   .0   .0   .0                                18.5      6.89    .09   18.28      2.75
150-180     .4  1.3  3.0  3.3  2.3  1.4   .6   .1   .0   .0   .0   .0   .0                                12.4      7.05    .21   19.60      2.94
180-210     .4   .8  1.2  1.3   .7   .3   .0   .0   .0   .0   .0   .0   .0                                 4.9      5.94    .07   13.14      2.79
210-240     .2   .5   .5   .3   .2   .1   .0   .0   .0   .0   .0   .0   .0                                 1.9      5.00    .19   12.95      2.83
240-270     .3   .4   .4   .2   .1   .1   .0   .0   .0   .0   .0   .0   .0                                 1.4      4.20    .21   12.63      2.63
270-300     .3   .5   .4   .2   .3   .2   .1   .0   .0   .0   .0   .0   .0                                 2.1      6.10    .07   19.24      4.04
300-330     .3   .6   .8   .9   .8   .7   .5   .2   .1   .0   .0   .0   .0                                 4.8      7.89    .17   17.81      3.83
330-360     .3   .8  1.4  1.6  1.7  1.5   .9   .4   .1   .0   .0   .0   .0                                 8.5      8.32    .21   18.65      3.61
CALM        .2                                                                                              .2


 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT    5.0 13.1 22.1 24.4 18.1 10.9  4.7  1.4   .3   .0   .0   .0   .0                               100.00
MEAN DIR   157  144  139  134  135  149  161  183  210  196   99    0    0
STD DEV     97   93   87   87   98  112  126  138  138  116    0    0    0

                                               SUMMARY STATISTICS

MEAN SPEED =   6.96 M/S              MAXIMUM =  20.02 M/S            MINIMUM =   .00 M/S              RANGE =  20.02 M/S
              STANDARD DEVIATION =  3.15 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.59 M/S           STANDARD DEVIATION =   4.14 M/S
MEAN Y COMPONENT =   -.24 M/S           STANDARD DEVIATION =   5.87 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42003              SPANNING 12/ 1  TO  3/31 YEARS: 1977 - 1986    22456 DATA POINTS -  83.4 PERCENT OF TOTAL

DIRECTION FROM                                                                                            PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                              SPEED   SPEED  SPEED

  0- 30      .6  1.6  2.9  3.0  1.7   .9   .4   .2   .0   .0   .0   .0   .0                               11.2      6.60    .04   17.90      3.09
 30- 60      .6  2.0  3.1  3.1  2.2   .7   .2   .0   .0   .0   .0   .0   .0                               11.9      6.30    .16   17.38      2.79
 60- 90      .5  1.6  3.1  3.9  2.0  1.0   .3   .1   .0   .0   .0   .0   .0                               12.5      6.59    .06   15.54      2.73
 90-120      .4  1.5  2.6  3.5  3.2  1.4   .4   .1   .0   .0   .0   .0   .0                               13.2      7.12    .22   16.40      2.90
120-150      .3  1.6  2.8  3.4  2.9  1.2   .3   .1   .0   .0   .0   .0   .0                               12.7      6.99    .11   17.85      2.79
150-180      .3  1.1  1.9  1.8  1.9   .8   .3   .1   .0   .0   .0   .0   .0                                8.1      6.98    .15   18.02      3.03
180-210      .2   .8  1.1  1.3   .6   .6   .2   .1   .0   .0   .0   .0   .0                                4.9      6.88    .07   18.23      3.35
210-240      .2   .4   .5   .6   .5   .4   .1   .1   .0   .0   .0   .0   .0                                2.8      7.05    .09   16.39      3.58
240-270      .2   .3   .4   .5   .5   .2   .1   .1   .0   .0   .0   .0   .0                                2.2      6.93    .15   16.26      3.57
270-300      .3   .4   .4   .7   .7   .6   .4   .1   .1   .0   .0   .0   .0                                3.6      7.94    .06   17.40      3.90
300-330      .3   .6  1.1  1.6  1.4  1.0   .6   .3   .1   .0   .0   .0   .0                                6.8      8.07    .09   19.27      3.66
330-360      .4  1.1  2.0  2.7  1.7  1.1   .5   .1   .0   .0   .0   .0   .0                                9.7      7.12    .15   17.69      3.15
CALM         .2                                                                                            .2


 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT     4.5 13.0 21.9 25.8 19.2  9.8  3.9  1.5   .3   .0   .0   .0   .0                              100.00
MEAN DIR    152  139  135  144  149  171  190  191  234  266    0    0    0
STD DEV     110  102  102  105  102  107  114  114  107   86    0    0    0

                                              SUMMARY STATISTICS
MEAN SPEED =   6.93 M/S              MAXIMUM =  19.27 M/S           MINIMUM =   .00 M/S             RANGE =  19.27 M/S
            STANDARD DEVIATION =  3.06 M/S


IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.00 M/S             STANDARD DEVIATION =  4.91 M/S
MEAN Y COMPONENT =   -.67 M/S             STANDARD DEVIATION =  5.37 M/S
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FREQUENCY DISTRIBUTION
1.00 HOURLY DATA          STATION: 42007             SPANNING 12/ 1  TO  3/31 YEARS: 1983 - 1986      4803 DATA POINTS -  70.9 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                            SPEED   SPEED  SPEED

  0- 30      .9  2.1  2.4  2.6  2.3  1.1   .1   .0   .0   .0   .0   .0   .0                              11.6      6.23    .07   13.79      3.00
 30- 60      .6  1.6  2.4  3.6  2.7   .7   .1   .0   .0   .0   .0   .0   .0                              11.7      6.52    .09   13.05      2.63
 60- 90      .7  2.0  3.0  2.9   .8   .2   .1   .0   .0   .0   .0   .0   .0                               9.9      5.47    .07   16.47      2.64
 90-120      .9  2.0  5.4  3.4   .5   .1   .1   .0   .0   .0   .0   .0   .0                              12.5      5.24    .07   17.16      2.13
120-150     1.4  2.0  3.4  2.6   .5   .1   .0   .0   .0   .0   .0   .0   .0                              11.0      4.82    .26   17.21      2.32
150-180      .7  2.2  2.3   .9   .5   .1   .0   .0   .0   .0   .0   .0   .0                               6.7      4.56    .15   13.49      2.22
180-210      .6  2.4  3.0  1.9   .4   .0   .0   .0   .0   .0   .0   .0   .0                               8.4      4.82    .07   12.40      2.17
210-240      .7  1.4  2.0   .8   .4   .0   .0   .0   .0   .0   .0   .0   .0                               5.3      4.56    .09    9.25      2.23
240-270      .6  1.4  1.5  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0                               4.9      4.57    .07   15.66      2.51
270-300      .7  1.5  1.6  1.0   .3   .2   .1   .0   .0   .0   .0   .0   .0                               5.3      4.97    .07   14.30      2.77
300-330      .7  1.0  1.0  1.0  1.2   .5   .2   .0   .0   .0   .0   .0   .0                               5.6      6.26    .09   14.79      3.36
330-360      .7  1.2  1.0  1.5   .9   .6   .1   .0   .0   .0   .0   .0   .0                               6.0      6.00    .15   13.00      3.06
CALM        1.1                                                                                             1.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT     10.4 21.7 29.1 23.1 10.8  3.6  1.0   .2   .1   .0   .0   .0   .0                            100.00
MEAN DIR     172  162   14  137  133  147  175  191  104    0    0    0    0
STD DEV      103   95   87   99  118  137  129  104   35    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   5.36 M/S            MAXIMUM =  17.21 M/S           MINIMUM =   .00 M/S           RANGE =  17.21 M/S
          STANDARD DEVIATION =  2.67 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.30 M/S           STANDARD DEVIATION =  3.96 M/S
MEAN Y COMPONENT =   -.58 M/S           STANDARD DEVIATION =  4.27 M/S
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FREQUENCY DISTRIBUTION
1.00 HOURLY DATA         STATION: 42008             SPANNING 12/ 1  TO  3/31 YEARS: 1980 - 1983     11475 DATA POINTS -  98.6 PERCENT OF TOTAL

DIRECTION FROM                                                                                                      PERCENT   MEAN    MIN    MAX       STD. DEV.
DEGREES                                                                                                                       SPEED   SPEED  SPEED

  0- 30       .2  1.1  2.3  3.1  2.4  1.8   .9   .3   .1   .0   .0   .0   .0                                          12.1     7.81    .08   16.84       3.18
 30- 60       .4  1.4  2.6  2.3  1.9  1.2   .5   .3   .1   .0   .0   .0   .0                                          10.8     7.13    .08   17.13       3.27
 60- 90       .4  1.8  3.7  2.3  1.2   .7   .3   .1   .0   .0   .0   .0   .0                                          10.5     6.10    .08   15.80       2.86
 90-120       .4  1.9  4.3  2.8  1.2   .1   .1   .0   .0   .0   .0   .0   .0                                          10.7     5.56    .06   12.62       2.17
120-150       .6  1.9  4.3  3.5  1.0   .4   .1   .0   .0   .0   .0   .0   .0                                          11.8     5.74    .13   16.26       2.36
150-180       .4  1.9  3.6  2.0  1.0   .3   .1   .0   .0   .0   .0   .0   .0                                           9.0     5.61    .12   14.97       2.38
180-210       .3  1.5  2.0  1.0   .4   .1   .0   .0   .0   .0   .0   .0   .0                                           5.4     5.01    .14   13.82       2.29
210-240       .4  1.2  1.0   .9   .3   .0   .0   .0   .0   .0   .0   .0   .0                                           3.8     4.77    .15   11.41       2.32
240-270       .2   .6   .7   .4   .1   .1   .0   .0   .0   .0   .0   .0   .0                                           2.0     4.83    .14   12.56       2.59
270-300       .3   .6   .9   .4   .3   .3   .1   .1   .0   .0   .0   .0   .0                                           3.1     6.06    .12   16.99       3.55
300-330       .3  1.0  1.0  1.2  1.1  1.0   .7   .4   .1   .1   .0   .0   .0                                           6.9     8.04    .26   20.72       4.07
330-360       .3   .9  1.9  2.5  2.5  2.4  1.8   .5   .1   .0   .0   .0   .0                                          12.9     8.63    .08   19.33       3.47
CALM         1.1                                                                                                        1.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26


 PERCENT     5.3 15.7 20.2 22.4 13.4  8.3  4.5  1.7   .4   .1   .0   .0   .0                                         100.00
 MEAN DIR    173  159  144  145  159  182  214  205  205  316  300    0    0
 STD DEV      98   93   91  105  125  141  142  144  145   49    0    0    0

                                                 SUMMARY STATISTICS

MEAN SPEDD =   6.53 M/S            MAXIMUM =  20.72 M/S           MINIMUM =   .00 M/S            RANGE =  20.72 M/S
          STANDARD DEVIATION =  3.20 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.47 M/S            STANDARD DEVIATION =   4.22 M/S
MEAN Y COMPONENT =  -1.62 M/S            STANDARD DEVIATION =   5.51 M/S
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FREQUENCY DISTRIBUTION
1.00 HOURLY DATA          STATION: 42009            SPANNING 12/ 1  TO  3/31 YEARS: 1980 - 1986     7860 DATA POINTS -  43.2 PERCENT OF TOTAL

DIRECTION FROM                                                                                     PERCENT    MEAN    MIN   MAX       STD. DEV.
DEGREES                                                                                                       SPEED   SPEED SPEED

  0- 30    1.0  2.2  3.0  2.4  1.7  1.1   .2   .0   .0   .0   .0   .0   .0                          11.6      5.95     .13  13.71       3.02
 30- 60     .7  2.1  2.0  1.9  1.0   .4   .1   .0   .0   .0   .0   .0   .0                           8.2      5.52     .18  13.38       2.72
 60- 90     .9  1.4  2.0  2.0   .8   .4   .3   .2   .1   .0   .0   .0   .0                           8.2      6.27     .07  19.18       3.64
 90-120     .8  1.9  2.8  2.3  1.2   .5   .4   .0   .1   .1   .0   .0   .0                          10.0      5.99     .06  19.06       3.21
120-150     .7  1.8  3.5  3.8  1.7  1.0   .3   .0   .0   .0   .0   .0   .0                          12.8      6.23     .15  14.88       2.75
150-180     .7  1.7  2.1  1.4   .8   .5   .2   .0   .0   .0   .0   .0   .0                           7.4      5.63     .39  14.09       2.92
180-210     .6  1.2  1.0   .4   .5   .3   .0   .0   .0   .0   .0   .0   .0                           4.0      4.98     .13  12.48       2.88
210-240     .4   .8   .7   .4   .3   .2   .1   .0   .0   .0   .0   .0   .0                           2.9      5.05     .09  13.26       3.11
240-270     .4   .7  1.3  1.6  1.0   .5   .2   .1   .0   .0   .0   .0   .0                           5.8      6.68     .20  16.64       3.05
270-300     .6  1.4  2.0  1.8  1.7   .9   .3   .1   .0   .0   .0   .0   .0                           8.7      6.61     .06  17.38       3.29
300-330     .8  2.0  1.8  1.7  1.6   .9   .3   .1   .0   .0   .0   .0   .0                           9.1      6.25     .09  18.78       3.29
330-360     .7  2.1  2.4  2.5  1.5   .8   .3   .0   .0   .0   .0   .0   .0                          10.4      6.14     .14  14.08       2.95
CALM        .9                                                                                        .9

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    9.2 19.3 24.4 22.3 13.9  7.5  2.5   .5   .2   .1   .0   .0   .0                        100.00
MEAN DIR   168  170  165  168  184  184  187  178  148  118    0    0    0
STD DEV    109  112  108  110  113  115  110  105   91   83    0    0    0

                                                 SUMMARY STATISTICS

MEAN SPEED =   5.98 M/S             MAXIMUM =  19.18 M/S           MINIMUM =   .00 M/S             RANGE =  19.18 M/S
           STANDARD DEVIATION =  3.09 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.59 M/S           STANDARD DEVIATION =   4.86 M/S
MEAN Y COMPONENT =    -.78 M/S           STANDARD DEVIATION =   4.56 M/S
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FREQUENCY DISTRIBUTION
1.00 HOURLY DATA          STATION: 42010/11          SPANNING 12/ 1  TO  3/31 YEARS: 1981 - 1983      7212 DATA POINTS -  82.6 PERCENT OF TOTAL

DIRECTION FROM                                                                                    PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                      SPEED   SPEED  SPEED

  0- 30      .4  1.5  2.4  2.7  2.9  2.4  1.7   .3   .0   .0   .0   .0   .0                        14.3     8.02     .06  17.16       3.39
 30- 60      .4  1.4  2.4  2.5  1.7  2.2  1.0   .2   .0   .0   .0   .0   .0                        11.9     7.65     .44  20.52       3.40
 60- 90      .5  1.4  1.9  1.6  1.1   .5   .2   .0   .0   .0   .0   .0   .0                         7.2     6.05     .08  14.65       3.01
 90-120      .3  1.3  2.8  2.6  1.8   .8   .6   .2   .0   .0   .0   .0   .0                        10.3     6.87     .41  15.56       3.01
120-150      .4  1.7  3.6  3.6  1.8   .7   .1   .0   .0   .0   .0   .0   .0                        12.0     6.26     .10  13.66       2.37
150-180      .4  1.5  3.3  2.8  1.1   .4   .0   .0   .0   .0   .0   .0   .0                         9.6     5.90     .03  14.29       2.28
180-210      .3  1.7  1.9  1.1   .6   .1   .0   .0   .0   .0   .0   .0   .0                         5.8     5.13     .17  11.66       2.24
210-240      .3  1.8  2.1  1.5   .4   .0   .0   .0   .0   .0   .0   .0   .0                         6.2     4.97     .16  12.25       2.17
240-270      .3   .6  1.3   .8   .3   .1   .0   .0   .0   .0   .0   .0   .0                         3.4     5.28     .29  13.07       2.45
270-300      .2   .7   .9   .9   .3   .3   .0   .1   .1   .0   .0   .0   .0                         3.6     6.13     .24  18.67       3.51
300-330      .2   .8  1.0   .8   .9   .7   .6   .4   .1   .1   .0   .0   .0                         5.7     8.35     .49  20.71       4.32
330-360      .2   .8  1.4  1.5  2.3  1.6   .6   .2   .0   .0   .0   .0   .0                         8.8     8.09     .57  20.97       3.31
CALM        1.3                                                                                     1.3

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT     5.3 15.4 25.0 22.4 15.5  9.7  4.8  1.4   .2   .2   .1   .0   .0                       100.00
MEAN DIR    156  160  155  146  151  133  119  176  283  290  255    0    0
STD DEV     102   96   93   96  116  127  127  142   90   91  141    0    0

                                         SUMMARY STATISTICS

MEAN SPEED =   6.71 M/S             MAXIMUM =  20.97 M/S           MINIMUM =   .00 M/S           RANGE =  20.97 M/S
          STANDARD DEVIATION =  3.25 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES COCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.53 M/S           STANDARD DEVIATION =   4.47 M/S
MEAN Y COMPONENT =  -1.14 M/S           STANDARD DEVIATION =   5.66 M/S
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D.1.3 NATIONAL DATA BUOY CENTER (NDBC) CMAN STATIONS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: ALRF1              SPANNING 12/ 1  TO  3/31 YEARS: 1985 - 1987      4899 DATA POINTS -  95.1 PERCENT OF TOTAL

DIRECTION FROM                                                                                   PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                     SPEED  SPEED  SPEED

  0- 30     .3  2.1  4.1  3.0  1.2   .3   .1   .0   .0   .0   .0   .0   .0                           11.1    5.64    .52  13.92       2.55
 30- 60     .4  1.0  1.2  1.9  1.1  1.0   .5   .4   .0   .0   .0   .0   .0                            7.6    7.60    .52  16.49       3.74
 60- 90     .2  1.1  1.9  2.3  2.7  2.4   .8   .2   .0   .0   .1   .0   .0                           11.7    8.16    .52  21.13       3.31
 90-120     .3   .9  1.3  2.2  3.4  2.4  1.0   .3   .0   .0   .1   .0   .0                           11.8    8.64    .52  22.68       3.18
120-150     .2   .8  2.1  2.4  2.4  1.5   .9   .2   .1   .0   .0   .0   .0                           10.6    7.87    .52  17.01       3.20
150-180     .2   .6  1.5  1.7   .9   .8   .3   .0   .0   .0   .0   .0   .0                            6.0    7.04    .52  16.49       3.08
180-210     .1   .8   .7   .5   .4   .4   .2   .2   .0   .0   .0   .0   .0                            3.4    6.96   1.03  17.01       3.99
210-240     .3  1.2  1.4  1.2   .4   .2   .1   .0   .0   .0   .0   .0   .0                            4.9    5.45    .52  20.62       3.25
240-270     .3   .9   .4   .3   .1   .1   .1   .0   .0   .0   .0   .0   .0                            2.3    4.43    .52  14.95       3.06
270-300     .6  1.6  1.4   .8  1.1   .5   .3   .1   .0   .0   .0   .0   .0                            6.5    6.08    .52  15.46       3.64
300-330     .3  1.4  1.2  1.1  1.0   .9   .4   .3   .0   .0   .0   .0   .0                            6.7    7.00    .52  19.07       3.90
330-360     .6  1.8  2.2  1.8  1.4  1.0   .1   .1   .0   .0   .0   .0   .0                            9.1    6.24    .52  17.01       3.20
CALM       8.4                                                                                        8.4

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   12.3 14.3 19.4 19.2 16.2 11.5  4.7  1.9   .3   .1   .2   .0   .0                         100.00
MEAN DIR   204  187  157  147  152  154  145  164  165  130  114  120    0
STD DEV    112  116  114  103   96   94   82  106   89  110   34    0    0

                                            SUMMARY STATISTICS

MEAN SPEED =   6.47 M/S                MAXIMUM =  22.68 M/S           MINIMUM =   .00 M/S              RANGE =  22.68 M/S
           STANDARD DEVIATION =  3.85 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.88 M/S             STANDARD DEVIATION =   5.40 M/S
MEAN Y COMPONENT =   -.18 M/S             STANDARD DEVIATION =   4.90 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: VENF1             SPANNING 12/ 1  TO  3/31 YEARS: 1986 - 1987     2893 DATA POINTS -  99.6 PERCENT OF TOTAL

DIRECTION FROM                                                                                         PERCENT   MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED  SPEED  SPEED

  0- 30     1.5  4.4  2.6   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                               9.4    3.44    .52   9.28       2.08
 30- 60     1.9  7.5  3.6   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                              13.8    3.35    .52   8.76       1.94
 60- 90     1.2  7.7  2.8   .7   .1   .1   .1   .0   .0   .0   .0   .0   .0                              12.6    3.53    .52  12.37       1.94
 90-120     1.0  3.9  2.7   .9   .2   .0   .0   .0   .0   .0   .0   .0   .0                               8.7    3.83    .52   9.79       2.06
120-150     1.1  2.6  3.0  2.8   .8   .2   .0   .0   .0   .0   .0   .0   .0                              10.5    4.97    .52  14.43       2.68
150-180      .7  2.4  2.4  1.6   .8   .2   .0   .0   .0   .0   .0   .0   .0                               8.1    4.81   1.03  11.86       2.72
180-210      .4  1.2   .4   .4   .0   .1   .0   .0   .0   .0   .0   .0   .0                               2.5    3.73    .52  10.82       2.52
210-240      .4  1.5   .6   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                               2.8    3.35    .52  10.82       2.20
240-270      .3  1.1   .5   .2   .2   .0   .0   .0   .0   .0   .0   .0   .0                               2.3    4.05    .52  11.34       2.58
270-300      .6  1.4   .9   .9  1.0   .2   .2   .0   .0   .0   .0   .0   .0                               5.2    5.77    .52  14.95       3.27
300-330      .5  1.3  1.6  2.6  2.3  1.4  1.0   .2   .0   .0   .0   .0   .0                              11.0    7.57    .52  15.98       3.35
330-360      .6   .8  1.3  1.6  1.4  1.2   .1   .1   .0   .0   .0   .0   .0                               7.2    6.93    .52  14.95       3.34
CALM        5.9                                                                                           5.9

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    16.1 35.8 22.5 13.3  7.1  3.4  1.4   .4   .0   .0   .0   .0   .0                             100.00
MEAN DIR    133  117  139  199  257  292  291  301    0    0    0    0    0
STD DEV     101   85   96  103   94   84   90   77    0    0    0    0    0

                                                   SUMMARY STATISTICS

MEAN SPEED =   4.39 M/S             MAXIMUM =  15.98 M/S           MINIMUM =   .00 M/S            RANGE =  15.98 M/S
           STANDARD DEVIATION =  2.93 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.30 M/S            STANDARD DEVIATION =   3.68 M/S
MEAN Y COMPONENT =    -.64 M/S            STANDARD DEVIATION =   3.71 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: CSBF1                SPANNING 12/ 1  TO  3/31 YEARS: 1984 - 1987      8694 DATA POINTS -  99.8 PERCENT OF TOTAL

DIRECTION FROM                                                                                              PERCENT   MEAN   MIN    MAX     STD. DEV.
DEGREES                                                                                                               SPEED  SPEED  SPEED

  0- 30     4.8  6.7  1.0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  12.6      2.26    .52    6.19     1.50
 30- 60     4.0  4.9   .9   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   9.8      2.26    .52    6.19     1.49
 60- 90     3.0  7.4  2.6   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  13.3      2.86    .52    7.73     1.74
 90-120     2.0  5.2  1.8   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   9.3      2.91    .52    8.25     1.80
120-150     1.6  2.8   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   5.0      2.50    .52    7.73     1.63
150-180     1.1  2.5  1.6   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   5.8      3.53    .26   10.31     2.17
180-210      .4  1.0   .6   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   2.3      3.67    .52   12.37     2.36
210-240      .8  1.7  1.1   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0                                   4.3      3.77    .52   12.37     2.43
240-270      .3   .7  1.0   .5   .3   .1   .0   .0   .0   .0   .0   .0   .0                                   2.9      4.91    .52   13.40     2.56
270-300      .5  1.9  2.6  2.0  1.0   .4   .2   .0   .0   .0   .0   .0   .0                                   8.6      5.71    .52   14.43     2.99
300-330     1.3  3.1  1.6   .9   .3   .1   .0   .0   .0   .0   .0   .0   .0                                   7.3      3.76    .52   11.34     2.36
330-360     2.7  5.4  1.6   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   9.8      2.65    .52    7.73     1.70
CALM        0.0                                                                                              0.0

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    31.3 43.4 17.0  5.5  2.0   .6   .3   .0   .0   .0   .0   .0   .0                                 100.00
MEAN DIR    132  149  188  242  261  281  277  283    0    0    0    0    0
STD DEV     113  112  107   81   64   35   30   38    0    0    0    0    0

                                                SUMMARY STATISTICS

MEAN SPEED =   2.91 M/S              MAXIMUM =  14.43 M/S          MINIMUM =   .00 M/S              RANGE =  14.43 M/S
          STANDARD DEVIATION =  2.10 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    .05 M/S            STANDARD DEVIATION =  2.88 M/S
MEAN Y COMPONENT =   -.36 M/S            STANDARD DEVIATION =  2.10 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BURL1               SPANNING 12/ 1  TO  3/31 YEARS: 1984 - 1987      8622 DATA POINTS -  99.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                         PERCENT    MEAN    MIN    MAX        STD. DEV.
DEGREES                                                                                                           SPEED   SPEED  SPEED

  0- 30      .4  1.6  3.1  4.3  2.5   .8   .1   .0   .0   .0   .0   .0   .0                            12.8      6.40    .00   14.43        2.66
 30- 60      .8  1.5  2.2  1.3   .7   .4   .1   .0   .0   .0   .0   .0   .0                             7.1      5.37    .28   15.46        3.09
 60- 90      .5  1.1  1.6  1.9  1.5   .5   .1   .0   .0   .0   .0   .0   .0                             7.2      6.35    .52   16.49        2.99
 90-120      .4   .9  1.3  2.8  2.1  1.0   .5   .1   .0   .0   .0   .0   .0                             9.0      7.37    .51   17.01        3.02
120-150      .3   .   1.4  1.6  2.4  1.0   .3   .1   .0   .0   .0   .0   .0                             8.0      7.52    .52   18.04        3.09
150-180      .3   .6  1.0  1.3  1.1   .4   .2   .0   .0   .0   .0   .0   .0                             4.9      6.73    .52   18.04        3.07
180-210      .2   .6   .6   .6   .3   .2   .0   .0   .0   .0   .0   .0   .0                             2.5      5.56    .24   18.04        3.35
210-240      .4  1.1  1.4  1.1   .7   .5   .2   .0   .0   .0   .0   .0   .0                             5.3      6.08    .52   18.04        3.21
240-270      .3   .5   .8   .5   .6   .4   .4   .1   .0   .0   .0   .0   .0                             3.6      7.07    .27   17.53        3.74
270-300      .4  1.2  1.3  1.2  1.0  1.0   .7   .3   .1   .0   .0   .0   .0                             7.0      7.49    .24   20.10        4.00
300-330      .5  1.0  1.5  1.5  1.4  1.3   .9   .3   .1   .0   .0   .0   .0                             8.5      7.73    .49   17.01        3.78
330-360      .4  1.7  3.9  5.2  4.0  2.2  1.0   .4   .1   .0   .0   .0   .0                            18.9      7.48    .49   18.56        3.14
CALM        5.1                                                                                         5.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    10.0 12.5 20.1 23.3 18.4  9.7  4.3  1.3   .3   .1   .0   .0   .0                           100.00
MEAN DIR    172  176  179  177  186  214  250  260  259  258  280    0    0
STD DEV     110  116  122  124  119  115  100  101   90   83    0    0    0

                                                       SUMMARY STATISTICS

MEAN SPEED =   6.57 M/S              MAXIMUM =  20.10 M/S           MINIMUM =   .00 M/S              RANGE =  20.10 M/S
          STANDARD DEVIATION =  3.50 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.12 M/S            STANDARD DEVIATION =   5.12 M/S
MEAN Y COMPONENT =  -1.56 M/S            STANDARD DEVIATION =   5.17 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: GDILI              SPANNING 12/ 1  TO  3/31 YEARS: 1984 - 1987      8301 DATA POINTS -  96.2 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN    MIN    MAX       STD. DEV.
DEGREES                                                                                                             SPEED   SPEED  SPEED

  0- 30     1.0  2.2  3.3  3.8  2.9  1.6   .7   .1   .0   .0   .0   .0   .0                              15.7      6.64     .52  17.53       3.43
 30- 60      .6  2.6  4.3  3.5  1.8   .5   .1   .0   .0   .0   .0   .0   .0                              13.4      5.60     .29  16.49       2.81
 60- 90      .5  3.0  3.6  1.4   .3   .1   .1   .0   .0   .0   .0   .0   .0                               9.1      4.57     .22  17.53       2.42
 90-120      .8  2.9  3.1  1.8   .5   .0   .0   .0   .0   .0   .0   .0   .0                               9.2      4.54     .52  15.98       2.57
120-150      .7  2.6  2.8  1.6   .5   .2   .0   .0   .0   .0   .0   .0   .0                               8.3      4.67     .52  13.92       2.59
150-180      .5  2.1  2.3   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                               5.9      4.11     .52  12.37       2.27
180-210      .2  1.4   .8   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                               2.7      3.75     .52   8.76       1.99
210-240      .7  2.0  1.8   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                               5.6      4.00     .52  10.82       2.40
240-270      .3  1.3  1.0   .8   .4   .0   .0   .0   .0   .0   .0   .0   .0                               3.9      4.62     .52  11.34       2.73
270-300      .5  1.5  1.1  1.2   .6   .2   .1   .0   .0   .0   .0   .0   .0                               5.2      5.18     .51  14.43       3.20
300-330      .8  1.5  1.4  1.2  1.1   .6   .2   .0   .0   .0   .0   .0   .0                               6.8      5.74     .34  14.95       3.49
330-360      .7  1.5  1.7  2.4  2.1  1.0   .3   .1   .0   .0   .0   .0   .0                               9.8      6.62     .40  16.49       3.42
CALM        4.5                                                                                           4.5

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    11.8 24.6 27.3 19.7 10.5  4.2  1.5   .3   .1   .0   .0   .0   .0                             100.00
MEAN DIR    172  159  141  148  160  159  147  177   71    0    0    0    0
STD DEV     109   96   98  118  137  147  151  153  124    0    0    0    0


                                         SUMMARY STATISTICS

MEAN SPEED =   5.07 M/S             MAXIMUM =  17.53 M/S           MINIMUM =   .00 M/S             RANGE =  17.53 M/S
           STANDARD DEVIATION =  2.94 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .0 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.86 M/S           STANDARD DEVIATION =   3.74 M/S
MEAN Y COMPONENT =   -1.48 M/S           STANDARD DEVIATION =   4.17 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: GRST2              SPANNING 12/ 1  TO  3/31 YEARS: 1984 - 1987      7968 DATA POINTS -  91.5 PERCENT OF TOTAL

DIRECTION FROM                                                                                            PERCENT    MEAN     MIN     MAX       STD. DEV.
DEGREES                                                                                                              SPEED    SPEED   SPEED

  0- 30     1.5  3.8  3.3  2.1   .8   .2   .1   .0   .0   .0   .0   .0   .0                                 11.7     4.49      .50   13.92        2.62
 30- 60     1.1  4.1  3.7  1.2   .2   .0   .0   .0   .0   .0   .0   .0   .0                                 10.3     3.96      .34   10.82        2.06
 60- 90      .7  2.5  2.0  1.2   .2   .0   .0   .0   .0   .0   .0   .0   .0                                  6.7     4.22      .40   10.31        2.28
 90-120      .6  1.6  3.9  2.7  1.2   .2   .0   .0   .0   .0   .0   .0   .0                                 10.1     5.46      .52   12.37        2.41
120-150      .5  2.9  3.9  3.5  1.3   .4   .1   .0   .0   .0   .0   .0   .0                                 12.5     5.48      .51   14.43        2.57
150-180      .6  2.9  3.4  1.5   .8   .2   .0   .0   .0   .0   .0   .0   .0                                  9.3     4.79      .51   11.86        2.52
180-210      .5  1.6  1.4   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  4.3     4.07      .52    8.76        2.09
210-240      .7  1.7  2.1  1.0   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  5.7     4.17      .18    9.79        2.25
240-270      .3   .6   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  1.4     3.29      .52    8.25        1.97
270-300      .7  2.5   .7   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  4.4     3.44      .52   13.92        2.19
300-330     1.2  3.4  1.6   .8   .3   .1   .0   .0   .0   .0   .0   .0   .0                                  7.4     3.79      .28   12.89        2.40
330-360     1.3  4.5  3.3  2.2   .7   .1   .0   .0   .0   .0   .0   .0   .0                                 12.1     4.39      .00   13.40        2.46
CALM        4.0                                                                                               4.0

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    13.6 32.3 29.6 17.4  5.7  1.2   .2   .0   .0   .0   .0   .0   .0                               100.00
MEAN DIR    177  177  155  157  152  162  146  150    0    0    0    0    0
STD DEV     121  116  100   11   98   93  107    0    0    0    0    0    0

                                               SUMMARY STATISTICS

MEAN SPEED =   4.32 M/S             MAXIMUM =  14.43 M/S            MINIMUM =    .00 M/S              RANGE =  14.43 M/S
          STANDARD DEVIATION =  2.37 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.96 M/S            STANDARD DEVIATION =   3.08 M/S
MEAN Y COMPONENT =    -.62 M/S            STANDARD DEVIATION =   3.73 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PTAT2              SPANNING 12/ 1  TO  3/31 YEARS: 1984 - 1987      8712 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                             SPEED   SPEED  SPEED

  0- 30      .7  2.4  3.6  3.6  3.1  1.4   .4   .2   .0   .0   .0   .0   .0                              15.4      6.61    .34   17.01      3.11
 30- 60      .7  2.1  3.0  1.6  1.0   .2   .0   .0   .0   .0   .0   .0   .0                               8.7      5.08    .35   12.89      2.61
 60- 90      .4  2.9  2.5   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                               6.8      4.10    .52   10.31      2.01
 90-120      .7  3.1  4.0  3.1   .8   .0   .0   .0   .0   .0   .0   .0   .0                              11.7      4.92    .52   12.37      2.35
120-150      .8  2.7  4.4  3.2  1.5   .4   .1   .0   .0   .0   .0   .0   .0                              13.1      5.47    .52   13.92      2.62
150-180      .6  1.8  2.2  1.5   .6   .2   .0   .0   .0   .0   .0   .0   .0                               6.8      4.97    .52   11.34      2.53
180-210      .3   .8   .6   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                               1.9      3.51    .52    7.73      2.00
210-240      .5  1.2   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                               2.3      2.97    .52    9.28      1.89
240-270      .3   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               1.2      2.58    .52    7.22      1.76
270-300      .6  1.3   .6   .5   .4   .1   .0   .0   .0   .0   .0   .0   .0                               3.4      4.59    .14   14.95      3.04
300-330      .7  1.7  1.7  1.7  1.1   .4   .1   .0   .0   .0   .0   .0   .0                               7.4      5.59    .45   15.46      2.95
330-360      .8  2.6  3.4  4.1  2.8  1.7   .5   .1   .0   .0   .0   .0   .0                              16.0      6.65    .52   18.56      3.17
CALM        5.2                                                                                           5.2

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    12.3 23.5 26.4 20.3 11.5  4.5  1.1   .3   .1   .0   .0   .0   .0                             100.00
MEAN DIR    178  162  149  165  168  192  204  163  183  347    0    0    0
STD DEV     108  105  105  120  134  147  153  165  177   42    0    0    0

                                         SUMMARY STATISTICS

MEAN SPEED =  5.17 M/S             MAXIMUM =  18.56 M/S           MINIMUM =   .00 M/S            RANGE =  18.56 M/S
            STANDARD DEVIATION =  2.96 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.10 M/S            STANDARD DEVIATION =   3.30 M/S
MEAN Y COMPONENT =  -1.43 M/S            STANDARD DEVIATION =   4.63 M/S
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D.1.4 OCEAN CURRENT MEASUREMENT PROGRAM (OCMP) PLATFORM

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: E1331             SPANNING 12/ 1  TO  3/31 YEARS: 1972 - 1975     6160 DATA POINTS -  52.9 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30     .6   .7  1.0  1.3  1.4   .8   .5   .2   .1   .2   .0   .0   .0                             6.9      8.19    .00   27.71       4.63
 30- 60     .3   .6   .6   .8  1.2  1.3   .8   .2   .1   .0   .0   .0   .0                             5.9      8.72    .04   21.92       3.95
 60- 90     .3   .5   .6   .9   .9   .4   .3   .2   .1   .2   .2   .0   .0                             4.6      8.61    .13   22.09       5.18
 90-120     .4   .4   .5   .8  1.1   .9   .7   .5   .1   .0   .0   .0   .0                             5.5      8.91    .00   18.34       4.17
120-150     .8   .5  1.0  1.6  2.5  1.3  1.3   .9   .4   .0   .0   .0   .0                            10.4      9.03    .01   20.40       4.17
150-180     .9  1.0  1.5  3.3  3.8  2.9  1.7   .5   .3   .1   .0   .1   .0                            16.2      8.71    .01   25.67       3.94
180-210     .4  1.0  1.5  1.9  1.9  1.8  1.0   .5   .3   .0   .0   .0   .0                            10.3      8.59    .02   24.79       3.98
210-240     .4   .6  1.0   .6   .6   .5   .7   .6   .1   .0   .0   .0   .0                             5.0      8.07    .00   17.43       4.57
240-270     .4   .9   .8  1.2  1.0   .9   .3   .2   .0   .0   .0   .0   .0                             5.8      7.19    .09   24.97       3.92
270-300     .6  1.2  1.6  1.9   .9   .8   .4   .1   .0   .0   .1   .1   .1                             7.8      7.31    .02   28.30       4.65
300-330    1.1  1.2  1.9  2.6  1.9  1.5   .9   .7   .3   .1   .0   .0   .0                            12.3      7.79    .01   24.21       4.35
330-360     .8   .7  1.4  1.5  1.8  1.4   .6   .4   .1   .2   .1   .1   .1                             9.3      8.36    .01   25.45       4.81
CALM        .0                                                                                         .0

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   28

PERCENT    7.2  9.3 13.4 18.2 19.0 14.5  9.2  5.1  1.8  1.0   .6   .4   .3                            100.00
MEAN DIR   202  202  208  198  183  187  176  192  179  159  192  231  238
STD DEV    105  102  101  100   98   98   94   93   85  119  121  112  111

                                              SUMMARY STATISTICS

MEAN SPEED =   8.33 M/S             MAXIMUM =  28.30 M/S           MINIMUM =  ..00 M/S              RANGE =  28.30 M/S
           STANDARD DEVIATION =  4.35 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.05 M/S           STANDARD DEVIATION =   5.96 M/S
MEAN Y COMPONENT =    .64 M/S           STANDARD DEVIATION =   7.21 M/S
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D.2

SUMMER SEASON (MAY - OCTOBER)

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D.2.1 NATIONAL WEATHER SERVICE (NWS) COASTAL STATIONS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: KEY WEST           SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986    74671 DATA POINTS -  99.5 PERCENT OF TOTAL

DIRECTION FROM                                                                                       PERCENT    MEAN     MIN    MAX      STD. DEV.
DEGREES                                                                                                         SPEED   SPEED  SPEED

  0- 30      .6  1.9  1.6   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                              4.8    3.97     .17  13.88       2.13
 30- 60      .7  3.0  2.4  1.5   .6   .1   .0   .0   .0   .0   .0   .0   .0                              8.3    4.53     .00  22.63       2.42
 60- 90      .7  4.6  4.4  2.2   .4   .1   .0   .0   .0   .0   .0   .0   .0                             12.3    4.48     .26  12.86       2.08
 90-120      .7  5.4 10.1  6.3   .9   .1   .0   .0   .0   .0   .0   .0   .0                             23.5    5.07     .00  15.43       1.98
120-150      .7  7.8  9.6  3.4   .4   .1   .0   .0   .0   .0   .0   .0   .0                             22.2    4.53     .17  16.98       1.89
150-180      .8  4.9  3.2   .9   .2   .1   .0   .0   .0   .0   .0   .0   .0                             10.0    3.94     .31  18.00       1.97
180-210      .5  2.4  1.0   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                              4.6    3.73     .24  12.35       2.04
210-240      .5  2.3   .9   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                              4.1    3.56     .33  12.35       1.88
240-270      .2   .9   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                              1.9    3.55     .17  11.83       2.02
270-300      .3   .7   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                              1.5    3.28     .28   9.77       1.90
300-330      .5  1.0   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                              2.1    3.22     .17  14.39       1.99
330-360      .4  1.2  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                              2.7    3.68     .31  10.99       1.88
CALM        2.1                                                                                           2.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     8.6 36.2 35.6 16.2  2.9   .5   .1   .0   .0   .0   .0   .0   .0                            100.00
MEAN DIR    158  142  129  116  109  131  133  145   86  180    0   40    0
STD DEV      96   73   60   46   47   51   23   80   73    0    0    0    0

                                                    SUMMARY STATISTICS

MEAN SPEED =    4.31 M/S              MAXIMUM =  22.63 M/S            MINIMUM =    .00 M/S              RANGE =  22.63 M/S
             STANDARD DEVIATION =  1.94 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.43 M/S          STABDARD DEVIATION =   2.76 M/S
MEAN Y COMPONENT =   1.13 M/S          STANDARD DEVIATION =   2.74 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: FT.MEYER           SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986     75072 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                            PERCENT    MEAN     MIN    MAX      STD. DEV.
DEGREES                                                                                                              SPEED   SPEED  SPEED

  0- 30      .9  4.2  2.4   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  8.1      3.55     .00   13.37      2.00
 30- 60     1.8  8.2  3.3  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                                 14.4      3.41     .00   12.35      2.01
 60- 90     2.1  9.6  4.0  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                 17.2      3.40     .00   12.35      1.94
 90-120     2.0  7.7  3.0   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                                 13.6      3.24     .17   12.35      1.91
120-150     1.3  4.7  1.5   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  7.8      3.05     .24   12.86      1.85
150-180      .9  2.8  1.1   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  5.1      3.22     .24   10.29      1.98
180-210      .5  1.4   .8   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  3.2      3.22     .31   11.32      2.11
210-240      .6  2.4  2.2   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  6.2      3.99     .17   13.37      2.08
240-270      .4  1.4  1.5   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  3.8      4.01     .24   12.86      1.95
270-300      .5  1.9  1.7   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  4.9      3.96     .00   10.29      2.04
300-330      .5  1.8  1.2   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  3.8      3.59     .17   10.00      2.05
330-360      .4  1.6   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  2.9      3.27     .00   11.32      1.88
CALM        9.0                                                                                              9.0

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    21.0 47.7 23.4  6.9   .8   .1   .0   .0   .0   .0   .0   .0   .0                                 99.99
MEAN DIR    135  126  144  146  141  140  112    0    0  300    0    0    0
STD DEV      87   86   96   95   95   89   88    0    0    0    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   3.15 M/S                MAXIMUM =  18.00 M/S            MINIMUM =   .00 M/S              RANGE =  18.00 M/S
            STANDARD DEVIATION =  1.84 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.96 M/S            STANDARD DEVIATION =   2.69 M/S
MEAN Y COMPONENT =    -.12 M/S            STANDARD DEVIATION =   2.27 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: TAMPA            SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986     73072 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                 PERCENT    MEAN    MIN    MAX     STD DEV.
DEGREES                                                                                                   SPEED   SPEED  SPEED

  0- 30     .6  3.5  1.6   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                       6.1     3.43    1.03   12.86      1.92
 30- 60    1.0  7.1  3.0   .8   .0   .0   .0   .0   .0   .0   .0   .0   .0                      12.1     3.41    1.03   11.32      1.91
 60- 90    1.4 10.7  4.6   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                      17.1     3.34    1.03   12.86      1.87
 90-120    1.2  7.8  2.9   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0                      12.7     3.29    1.03   15.43      1.87
120-150     .6  5.4  2.3   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                       8.8     3.40    1.03   12.86      1.81
150-180     .3  2.9  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                       4.6     3.37    1.03   12.86      1.92
180-210     .1  1.3   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                       2.4     3.77     .51   12.35      2.35
210-240     .3  3.9  2.0   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                       6.5     3.54    1.03   12.35      1.75
240-270     .1  2.2  2.1   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                       4.8     4.05    1.54   13.37      1.79
270-300     .3  3.2  4.3  1.5   .1   .0   .0   .0   .0   .0   .0   .0   .0                       9.3     4.41    1.03   13.37      1.95
300-330     .4  3.0  1.4   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                       5.0     3.48     .51   11.32      1.87
330-360     .3  2.1  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                       3.8     3.50    1.03   11.32      1.95
CALM       6.8                                                                                  6.8

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   13.5 53.1 26.6  6.3   .4   .1   .0   .0   .0   .0   .0   .0   .0                     100.00
MEAN DIR   133  143  167  172  168  197  157  180    0    0    0    0    0
STD DEV     90   91  100  106  103   91   82    0    0    0    0    0    0

                                      SUMMARY STATISTICS

MEAN SPEED =   3.30 M/S              MAXIMUM =  15.43 M/S           MINIMUM =   .00 M/S            RANGE =  15.43 M/S
           STANDARD DEVIATION =  1.65 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.58 M/S            STANDARD DEVIATION =   2.94 M/S
MEAN Y COMPONENT =   -.01 M/S            STANDARD DEVIATION =   2.16 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PENSACOL          SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986     75072 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                         PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                           SPEED   SPEED  SPEED

  0- 30     1.5  7.8  2.5   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                          12.3      3.15    .00   12.86      1.81
 30- 60     1.0  5.4  1.7   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           8.3      3.09    .17   19.55      1.69
 60- 90      .8  4.7  1.7   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           7.5      3.28    .18   20.58      1.62
 90-120      .7  3.4  2.2   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                           7.0      3.83    .17   23.66      2.00
120-150      .6  3.6  3.7  1.3   .1   .0   .0   .0   .0   .0   .0   .0   .0                           9.4      4.20    .17   22.68      2.01
150-180      .6  3.4  3.7  1.1   .1   .0   .0   .0   .0   .0   .0   .0   .0                           9.0      4.16    .17   15.91      1.95
180-210      .5  2.3  2.4   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                           5.9      4.01    .34   12.35      1.93
210-240     1.1  5.0  2.7   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                           9.7      3.57    .17   15.95      1.99
240-270      .7  2.8  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           4.8      3.21    .00   12.35      1.78
270-300      .9  3.0   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                           4.8      2.90    .24   13.37      1.71
300-330      .8  3.2   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           5.1      2.97    .28   13.37      1.81
330-360     1.3  5.9  2.1   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                           9.8      3.23    .33   14.40      1.89
CALM        6.4                                                                                        6.4

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    17.0 50.5 25.3  6.4   .6   .1   .0   .0   .0   .0   .0   .0   .0                         100.00
MEAN DIR    178  165  164  171  170  178  192  190   80  111  116  115    0
STD DEV     115  113   92   82   84   88   96  112   61   16   13   13    0

                                                   SUMMARY STATISTICS

MEAN SPEED =   3.27 M/S              MAXIMUM =  23.66 M/S            MINIMUM =   .00 M/S              RANGE =  23.66 M/S
           STANDARD DEVIATION =  1.75 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.32 M/S           STANDARD DEVIATION =   2.38 M/S
MEAN Y COMPONENT =    .24 M/S           STANDARD DEVIATION =   2.82 M/S
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FREUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: MOBILE              SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986    75072 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                 PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                   SPEED   SPEED  SPEED

  0- 30    1.1  5.7  3.2   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                       11.1      3.63    .24   15.95      1.97
 30- 60    1.4  7.   2.8   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0                       12.1      3.25    .18   16.57      1.76
 60- 90    1.2  4.4  2.2   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                        8.2      3.30    .00   22.63      1.88
 90-120    1.0  3.2  1.7   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                        6.4      3.40    .00   18.52      2.00
120-150     .8  4.0  2.4   .9   .2   .0   .0   .0   .0   .0   .0   .0   .0                        8.3      3.82    .20   20.58      2.10
150-180    1.1  5.2  2.9  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                       10.6      3.76    .24   20.58      2.09
180-210     .7  3.0  1.8   .6   .1   .0   .0   .0  -.0   .0   .0   .0   .0                        6.3      3.76    .34   16.49      2.13
210-240    1.2  5.0  2.2   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                        9.2      3.43    .17   13.36      1.97
240-270     .8  2.5   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                        4.1      2.84    .24    9.26      1.72
270-300    1.0  3.5   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                        5.5      2.83    .18   10.29      1.71
300-330    1.2  4.1  1.3   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                        6.8      3.01    .24   11.83      1.83
330-360     .8  3.0  1.5   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                        5.8      3.40    .26   20.58      2.07
CALM       5.6                                                                                     5.6

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   18.0 51.1 23.4  6.4  1.0   .1   .0   .0   .0   .0   .0   .0   .0                      100.00
MEAN DIR   173  161  150  155  161  152  150  120  118   99  213   79    0
STD DEV    104  103   98   93   84   83   81   72   67   40  118    0    6

                                              SUMMARY STATISTICS

MEAN SPEED =   3.24 M/S              MAXIMUM =  22.63 M/S           MINIMUM =   .00 M/S              RANGE =  22.63 M/S
             STANDARD DEVIATION =  1.74 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.38 M/S           STANDARD DEVIATION =  2.35 M/S
MEAN Y COMPONENT =    .13 M/S           STANDARD DEVIATION =  2.81 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA            STATION: BOOTHVL             SPANNING  5/ 1  TO 10/31 YEARS: 1972 - 1986     47115 DATA POINTS -  71.1 PERCENT OF TOTAL

DIRECTION FROM                                                                                              PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                                SPEED   SPEED  SPEED

  0- 30     1.3  3.6  2.6  1.2   .2   .0   .0   .0   .0   .0   .0   .0   .0                                   8.9      3.89    .17   12.86       2.18
 30- 60     1.2  4.0  2.8  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0                                   9.5      3.91    .00   12.86       2.14
 60- 90     1.3  3.7  2.5   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   8.5      3.75    .00   11.82       2.08
 90-120     1.9  4.8  2.4  1.0   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  10.2      3.45    .24   15.43       2.05
120-150     2.6  6.4  2.8   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  12.8      3.24    .14   14.92       1.97
150-180     1.7  5.2  3.1  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0                                  11.5      3.74    .15   16.46       2.15
180-210      .8  2.9  1.6   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   6.0      3.66    .26   13.89       2.06
210-240     1.2  3.7  2.0   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   7.5      3.50    .12   13.37       1.97
240-270      .6  1.9  1.1   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   4.0      3.53    .26   12.34       1.97
270-300     1.0  2.2   .9   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   4.4      3.08    .00   12.35       1.84
300-330     1.3  2.4   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   4.6      2.75    .22   11.82       1.75
330-360      .9  2.3   .8   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   4.2      3.15    .26   10.80       1.82
CALM        7.9                                                                                              7.9

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !         !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT    23.7 43.1 23.2  8.2  1.4   .2   .0   .0   .0   .0   .0   .0   .0                                 100.00
MEAN DIR    165  159  143  128  123  140  173  154  180    0    0    0    0
STD DEV      94   92   87   84   75   79   74   30    0    0    0    0    0

                                                 SUMMARY STATISTICS

MEAN SPEED =   3.25 M/S              MAXIMUM =  16.46 M/S           MINIMUM =   .00 M/S            RANGE =  16.46 M/S
            STANDARD DEVIATION =  1.98 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.73 M/S           STANDARD DEVIATION =  2.50 M/S
MEAN Y COMPONENT =    .40 M/S           STANDARD DEVIATION =  2.74 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PT.ARTHU          SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986    75072 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                   PERCENT     MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                      SPEED   SPEE  SPEED

  0- 30     1.4  5.5  2.8  1.1   .1   .0   .0   .0   .0   .0   .0   .0   .0                      10.9        3.59    .17   11.83       2.01
 30- 60      .9  4.5  2.5   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                       8.8        3.64    .17   13.37       1.90
 60- 90      .9  3.6  2.2   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                       7.5        3.73    .00   15.42       1.93
 90-120      .8  3.5  2.7   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                       8.1        3.96    .00   14.40       1.99
120-150     1.0  4.0  3.5  1.9   .3   .1   .0   .0   .0   .0   .0   .0   .0                      10.8        4.35    .17   17.99       2.21
150-180     1.3  7.3  5.2  2.7   .5   .1   .0   .0   .0   .0   .0   .0   .0                      17.0        4.21    .17   15.43       2.16
180-210     1.0  4.1  2.8  1.1   .1   .0   .0   .0   .0   .0   .0   .0   .0                       9.1        3.88    .17   11.83       1.95
210-240     1.4  4.1  1.8   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                       7.9        3.29    .17   14.40       1.96
240-270      .7  1.7   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                       3.1        2.98    .18    8.74       1.68
270-300      .8  1.9   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                       3.6        3.00    .00   23.13       1.88
300-330      .9  2.0   .7   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                       4.0        3.20    .17   15.43       2.09
330-360      .9  2.4   .9   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                       4.8        3.41    .17   13.89       2.18
CALM        4.5                                                                                   4.5

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    16.4 44.7 26.4 10.5  1.6   .3   .1   .0   .0   .0   .0   .0   .0                     100.00
MEAN DIR    175  154  145  149  157  150  183  176  130    0  270  290    0
STD DEV     103   94   80   75   76   71   93   79    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   3.60 M/S              MAXIMUM =  23.13 M/S            MINIMUM =   .00 M/S             RANGE =  23.13 M/S
          STANDARD DEVIATION =  1.93 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.74 M/S            STANDARD DEVIATION =  2.40 M/S
MEAN Y COMPONENT =    .81 M/S            STANDARD DEVIATION =  3.12 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: CORPUS            SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986    75072 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                       PERCENT   MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                        SPEED  SPEED  SPEED

  0- 30       .5  2.5  2.7  1.6   .5   .1   .0   .0   .0   .0   .0   .0   .0                            7.9    4.04    .28   18.00      2.33
 30- 60       .3  1.7  1.8  1.0   .3   .1   .0   .0   .0   .0   .0   .0   .0                            5.1    4.77    .37   18.52      2.36
 60- 90       .4  1.9  2.2  1.5   .3   .0   .0   .0   .0   .0   .0   .0   .0                            6.4    4.75    .00   23.15      2.32
 90-120       .8  4.3  4.4  3.5   .6   .1   .0   .0   .0   .0   .0   .0   .0                           13.7    4.79    .00   23.15      2.26
120-150      1.0  8.7  9.1 10.3  5.6   .9   .1   .0   .0   .0   .0   .0   .0                           35.7    5.72    .26   17.08      2.50
150-180       .8  5.2  5.4  4.2  2.0   .5   .1   .0   .0   .0   .0   .0   .0                           18.2    5.30    .17   25.72      2.58
180-210       .3  1.2   .7   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                            2.7    3.95    .17   12.85      2.22
210-240       .3  1.0   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                            1.6    2.96    .00    8.74      1.75
240-270       .2   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                             .7    2.71    .00    9.06      1.82
270-300       .3   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                            1.0    2.69    .17   11.83      1.77
300-330       .3   .9   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                            1.5    3.48    .24   23.66      2.65
330-360       .3  1.3   .6   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0                            3.0    4.33    .17   16.85      2.50
CALM         2.4                                                                                        2.4

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      7.8 29.6 27.6 23.3  9.7  1.7   .2   .1   .0   .0   .0   .0   .0                         100.00
MEAN DIR     158  144  126  130  138  142  140  137  166  129  105  129  170
STD DEV       88   74   57    4   37   38   65   96  137  113   51   69    0

                                             SUMMARY STATISTICS

MEAN SPEED =   4.98 M/S             MAXIMUM =  25.72 M/S           MINIMUM =   .00 M/S            RANGE =  25.72 M/S
         STANDARD DEVIATION =  2.43 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.56 M/S            STANDARD DEVIATION =   2.41 M/S
MEAN Y COMPONENT =   2.10 M/S            STANDARD DEVIATION =   3.73 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BROWNS            SPANNING  5/ 1  TO 10/31 YEARS: 1970 - 1986     75072 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                   PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                     SPEED   SPEED  SPEED

  0- 30     .7  2.0  1.1   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                        4.7     3.86     .00  22.63     2.50
 30- 60     .6  2.2  1.7   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                        5.4     3.96     .00  13.37     2.22
 60- 90     .7  2.7  2.1   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                        6.4     3.90     .34  12.85     2.10
 90-120    1.1  5.2  3.7  2.3   .2   .0   .0   .0   .0   .0   .0   .0   .0                       12.5     4.14     .34  15.95     2.19
120-150    1.2  8.5  9.2  9.3  3.6   .4   .0   .0   .0   .0   .0   .0   .0                       32.2     5.30     .34  15.43     2.46
150-180     .6  4.7  5.5  6.0  3.8   .9   .1   .0   .0   .0   .0   .0   .0                       21.7     5.92     .17  15.43     2.67
180-210     .2   .6   .5   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                        1.8     4.59     .24  21.60     2.80
210-240     .2   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                         .9     3.01     .17  11.32     2.05
240-270     .1   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                         .4     3.20     .31  21.09     3.36
270-300     .2   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                         .6     2.96     .34  15.43     2.13
300-330     .5  1.6   .5   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                        2.9     3.46     .17  13.89     2.23
330-360     .7  2.3  1.0   .6   .2   .0   .0   .0   .0   .0   .0   .0   .0                        4.8     3.76     .12  25.72     2.38
CALM       5.6                                                                                   5.6

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   12.5 30.8 25.6 21.2  8.3  1.4   .2   .0   .0   .0   .0   .0   .0                     100.00
MEAN DIR   152  147  138  144  156  162  166  142  172   32  192    0  330
STD DEV    100   83   58   43   28   20   41   76  139   81  101    0    0

                                               SUMMARY STATISTICS

MEAN SPEED =    4.58 M/S              MAXIMUM =  25.72 M/S           MINIMUM =    .00 M/S              RANGE =  25.72 M/S
            STANDARD DEVIATION =  2.53 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.12 M/S           STANDARD DEVIATION =   2.21 M/S
MEAN Y COMPONENT =   2.25 M/S           STANDARD DEVIATION =   3.60 M/S
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D.2.2 NATIONAL DATA BUOY CENTER (NDBC) BUOYS AND PLATFORMS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42001            SPANNING  5/ 1  TO 10/31 YEARS: 1977 - 1986    39491 DATA POINTS -  89.4 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN   MIN    MAX       STD. DEV.
DEGREES                                                                                                          SPEED  SPEED  SPEED

  0- 30      .9  1.5  1.3   .9   .6   .3   .1   .0   .0   .0   .0   .0   .0                              5.6    5.13    .03  13.84       3.68
 30- 60     1.5  2.8  2.8  2.0   .9   .3   .1   .0   .0   .0   .0   .0   .0                             10.4    4.08    .02  13.85       2.66
 60- 90     1.6  4.9  5.6  3.6  1.4   .3   .1   .0   .0   .0   .0   .0   .0                             17.5    4.97    .06  17.68       2.46
 90-120     1.6  5.3  7.5  5.5  1.9   .4   .2   .0   .0   .0   .0   .0   .0                             22.5    5.25    .03  20.87       2.47
120-150     1.6  4.2  5.5  3.8  1.8   .6   .2   .0   .0   .0   .0   .0   .0                             17.7    5.32    .03  22.77       2.75
150-180     1.3  2.6  2.9  2.0  1.0   .4   .1   .0   .0   .0   .0   .0   .0                             10.3    5.14    .06  20.65       2.86
180-210      .8  1.4  1.0   .6   .3   .2   .1   .0   .0   .0   .0   .0   .0                              4.3    4.60    .03  18.89       3.33
210-240      .6   .8   .5   .2   .1   .1   .1   .1   .0   .0   .0   .0   .0                              2.3    4.16    .03  19.49       3.43
240-270      .5   .5   .4   .1   .1   .0   .1   .1   .0   .0   .0   .0   .0                              1.8    4.34    .04  16.40       3.65
270-300      .5   .6   .3   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0                              1.6    3.63    .03  16.60       2.54
300-330      .4   .8   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                              1.9    3.56    .03  10.95       2.21
330-360      .7  1.0   .8   .3   .1   .1   .0   .0   .0   .0   .0   .0   .0                              3.1    3.91    .06  14.43       2.51
CALM        1.0                                                                                           1.0

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    13.0 26.4 29.0 19.2  8.2  2.7  1.0   .3   .1   .1   .0   .0   .0                            100.00
MEAN DIR    145  129  120  113  113  117  126  103  149  139  131  128    0
STD DEV      93   88   68   59   60   73   75   56   49   34   37   53    0

                                             SUMMARY STATISTICS

MEAN SPEED =   4.94 M/S             MAXIMUM =  22.77 M/S           MINIMUM =   .00 M/S            RANGE =  22.77 M/S
           STANDARD DEVIATION =  2.70 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED    .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.92 M/S          STANDARD DEVIATION =   3.18 M/S
MEAN Y COMPONENT =    .73 M/S          STANDARD DEVIATION =   3.54 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42002             SPANNING  5/ 1  TO 10/31 YEARS: 1977 - 1986     39744 DATA POINTS -  90.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN   MAX     STD. DEV.
DEGREES                                                                                                            SPEED  SPEED  SPEED

  0- 30      .6  1.2  1.0   .9   .8   .4   .2   .0   .0   .0   .0   .0   .0                                5.2     5.96    .07  26.22    3.53
 30- 60      .7  1.6  1.9  2.0   .9   .4   .1   .1   .0   .0   .0   .0   .0                                7.7     5.88    .02  37.29    2.97
 60- 90      .8  3.0  4.4  3.2   .9   .3   .0   .0   .0   .0   .0   .0   .0                               12.7     5.26    .11  17.54    2.32
 90-120     1.3  4.7  7.7  5.9  2.1   .4   .1   .0   .0   .0   .0   .0   .0                               22.2     5.43    .06  34.15    2.33
120-150     1.2  4.7  7.8  7.1  4.4  1.2   .2   .0   .0   .0   .0   .0   .0                               26.6     6.02    .07  20.08    2.53
150-180      .9  2.7  3.9  3.1  1.8   .6   .1   .0   .0   .0   .0   .0   .0                               13.0     5.68    .07  17.51    2.63
180-210      .7  1.3  1.2   .6   .2   .1   .0   .0   .0   .0   .0   .0   .0                                4.1     4.34    .04  16.14    2.62
210-240      .4   .7   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                1.8     4.03    .08  16.06    2.85
240-270      .3   .4   .1   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0                                1.1     3.83    .11  14.26    3.07
270-300      .3   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                1.1     4.72    .07  22.02    4.72
300-330      .3   .4   .3   .1   .0   .0   .0   .0   .1   .0   .0   .0   .0                                1.3     5.00    .06  20.33    4.70
330-360      .4   .7   .5   .3   .2   .1   .0   .0   .0   .0   .0   .0   .0                                2.2     5.21    .11  20.72    3.80
CALM         .9                                                                                           .9


 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   37


PERCENT     8.7 21.7 29.4 23.4 11.5  3.8   .8   .3   .2   .1   .0   .0   .0                             100.00
MEAN DIR    150  131  123  117  121  121  118  149  226  229  263  147   68
STD DEV      90   73   57   51   54   71   92  119  128  135   59   65   40

                                              SUMMARY STATISTICS
MEAN SPEED =   5.51 M/S            MAXIMUM =  37.29 M/S          MINIMUM =   .00 M/S            RANGE =  37.29 M/S
            STANDARD DEVIATION =  2.74 M/S


IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -3.31 M/S           STANDARD DEVIATION =   3.06 M/S
MEAN Y COMPONENT =   1.45 M/S           STANDARD DEVIATION =   3.93 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42003              SPANNING  5/ 1  TO 10/31 YEARS: 1977 - 1986    37892 DATA POINTS -  89.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                      PERCENT    MEAN    MIN    MAX       STD. DEV.
DEGREES                                                                                                        SPEED   SPEED  SPEED

  0- 30      1.2  1.9  1.8  1.2   .5   .2   .0   .0   .0   .0   .0   .0   .0                          6.8      4.62     .06   13.79      2.70
 30- 60      1.4  3.2  ..8  2.5  1.3   .3   .0   .0   .0   .0   .0   .0   .0                         12.5      5.02     .02   13.75      2.50
 60- 90      1.7  5.3  7.1  5.0  2.4   .7   .2   .0   .0   .0   .0   .0   .0                         22.4      5.31     .03   16.15      2.54
 90-120      1.9  5.1  6.3  4.5  1.6   .3   .1   .0   .0   .0   .0   .0   .0                         19.7      5.02     .06   15.98      2.39
120-150      1.4  3.2  3.6  2.3  1.1   .2   .0   .0   .0   .0   .0   .0   .0                         11.8      4.89     .09   15.21      2.51
150-180      1.5  1.9  1.9  1.0   .5   .1   .1   .0   .0   .0   .0   .0   .0                          6.9      4.31     .06   20.7      2.72
180-210      1.0  1.1   .8   .5   .2   .1   .1   .0   .0   .0   .0   .0   .0                          3.7      4.18     .07   17.02      3.06
210-240       .8  1.0   .7   .3   .1   .0   .1   .0   .0   .0   .0   .0   .0                          3.0      3.89     .09   18.26      2.96
240-270       .8   .8   .6   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                          2.7      3.67     .08   17.51      2.66
270-300       .7   .8   .5   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                          2.4      3.53     .06   14.25      2.48
300-330       .8   .8   .8   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                          2.8      3.64     .09   13.23      2.42
330-360       .8  1.2  1.2   .6   .3   .1   .0   .0   .0   .0   .0   .0   .0                          4.2      4.34     .10   13.75      2.57
CALM         1.1                                                                                      1.1


 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT     15.1 26.3 29.0 10.7  8.2  2.1   .6   .1   .0   .0   .0  ..0   .0                       100.00
MEAN DIR     155  129  119  110  107  102  135  163  220  228  170    0    0
STD DEV       97   87   81   73   72   75   78   66   74    0    0    0    0


                                                 SUMMARY STATISTICS
MEAN SPEED =    4.74 M/S              MAXIMUM =  20.73 M/S              MINIMUM =   .00 M/S              RANGE =  20.73 M/S

          STANDARD DEVIATION =  2.57 M/S


IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.73 M/S             STANDARD DEVIATION =   3.34 M/S
MEAN Y COMPONENT =   -.12 M/S             STANDARD DEVIATION =   3.24 M/S
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 FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA            STATION: 42007              SPANNING  5/ 1  TO 10/31 YEARS: 1984 - 1986     12982 DATA POINTS -  98.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                            PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                              SPEED   SPEED  SPEED

  0- 30      .7  1.7  1.8   .9   .6   .2   .0   .0   .0   .0   .0   .0   .0                                  6.0      4.97     .07   16.96       2.65
 30- 60      .8  1.6  2.0  2.0  1.1   .4   .0   .1   .0   .0   .0   .0   .0                                  8.0      5.64     .09   16.17       2.85
 60- 90      .8  1.4  2.0  2.3  1.6   .4   .1   .0   .0   .0   .0   .0   .0                                  8.8      6.04     .07   14.89       2.89
 90-120      .9  2.3  3.3  2.3   .9   .1   .0   .0   .0   .0   .0   .0   .0                                  9.9      5.05     .07   11.59       2.34
120-150     1.1  3.8  5.0  2.9   .9   .1   .1   .0   .0   .0   .0   .0   .0                                 14.0      4.92     .09   16.26       2.35
150-180     1.3  3.0  3.7  2.0   .7   .2   .1   .0   .0   .0   .0   .0   .0                                 10.9      4.72     .07   16.47       2.38
180-210     1.4  3.5  3.8  1.6   .4   .1   .0   .0   .0   .0   .0   .0   .0                                 10.8      4.34     .07   12.21       2.16
210-240     1.2  3.2  3.0  1.2   .3   .0   .0   .0   .0   .0   .0   .0   .0                                  9.0      4.21     .09   12.88       2.10
240-270     1.2  2.4  2.0   .9   .2   .0   .0   .0   .0   .0   .0   .0   .0                                  6.9      4.02     .07   11.95       2.20
270-300      .9  1.7  1.9   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  5.5      4.14     .07   12.32       2.16
300-330      .8  1.6  1.4   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  4.3      3.81     .09   15.58       2.11
330-360     1.0  1.7  1.1   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  4.5      3.71     .7    18.79       2.44
CALM        1.6                                                                                             1.6

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT    13.7 27.8 31.2 17.8  7.1  1.8   .3   .2   .0   .0   .0   .0   .0                                100.00
MEAN DIR    180  181  168  143  116  103  135   93  100  350    0    0    0
STD DEV      94   90   85   81   77   81   91   57   63    0    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   4.66 M/S                MAXIMUM =  18.79 M/S             MINIMUM =   .00 M/S              RANGE =  18.79 M/S
           STANDARD DEVIATION =  2.47 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED       .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.90 M/S            STANDARD DEVIATION =   3.66 M/S
MEAN Y COMPONENT =    .02 M/S            STANDARD DEVIATION =   3.57 M/S
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 FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42000              SPANNING  5/ 1  TO 10/31 YEARS: 1981 - 1984     14144 DATA POINTS -  91.9 PERCENT OF TOTAL

DIRECTION FROM                                                                                   PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                     SPEED  SPEED  SPEED

  0- 30      .1   .6  1.1   .9   .6   .5   .2   .1   .0   .0   .0   .0   .0                         4.1      7.30    .36  25.03        3.52
 30- 60      .3   .9  1.5  1.5   .9   .4   .1   .0   .0   .0   .0   .0   .0                         5.6      6.29    .04  21.57        2.85
 60- 90      .3  1.3  2.9  2.5  1.1   .2   .0   .0   .0   .0   .0   .0   .0                         8.4      5.85    .08  13.12        2.22
 90-120      .4  2.1  4.3  5.1  2.0   .4   .1   .0   .0   .0   .0   .0   .0                        14.3      6.05    .08  15.30        2.30
120-150      .7  2.9  6.3  6.7  4.0  1.2   .2   .0   .0   .0   .0   .0   .0                        22.0      6.37    .10  19.14        2.46
150-180      .6  3.3  6.9  7.2  2.9   .7   .1   .1   .0   .0   .0   .0   .0                        21.8      6.06    .12  18.37        2.31
180-210      .5  2.2  4.8  3.9   .9   .2   .1   .0   .0   .0   .0   .0   .0                        12.7      5.54    .28  16.73        2.19
210-240      .4  1.0  1.4   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0                         3.8      4.96    .04  29.42        2.98
240-270      .1   .4   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                          .9      4.42    .14  29.87        3.24
270-300      .2   .3   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                          .8      3.68    .03  13.45        2.47
300-330      .2   .4   .5   .2   .2   .1   .1   .0   .0   .0   .0   .0   .0                         1.8      5.58    .10  21.73        3.67
330-360      .2   .5   .8   .8   .4   .3   .2   .1   .0   .0   .0   .0   .0                         3.4      7.05    .08  27.86        3.87
CALM         .4                                                                                     .4

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   30


PERCENT     4.5 15.7 31.1 29.7 13.3  4.1  1.0   .3   .1   .1   .1   .0   .1                      100.00
MEAN DIR    170  155  147  142  136  135  168  192  160   87  154  243  240
STD DEV      85   71   65   60   64   87  118  123  121   76  151  175   92

                                             SUMMARY STATISTICS

MEAN SPEED =    6.03 M/S              MAXIMUM =  29.87 M/S            MINIMUM =    .00 M/S              RANGE =  29.87 M/S
            STANDARD DEVIATION =  2.58 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.48 M/S           STANDARD DEVIATION =   3.38 M/S
MEAN Y COMPONENT =   2.37 M/S           STANDARD DEVIATION =   4.46 M/S
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FREQUENCY DISTRIBUTION
1.00 HOURLY DATA          STATION: 42009              SPANNING  5/ 1  TO 10/31 YEARS: 1981 - 1986     9578 DATA POINTS -  36.1 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30     .9  1.7  1.6   .9   .4   .0   .0   .0   .0   .0   .0   .0   .0                               5.6     4.33     .07  12.34      2.36
 30- 60    1.1  2.2  2.1  1.0   .6   .2   .1   .0   .0   .0   .0   .0   .0                               7.3     4.67     .09  12.54      2.60
 60- 90    1.1  2.3  2.1  1.8   .5   .6   .1   .0   .0   .0   .0   .0   .0                               8.6     5.15     .02  12.95      2.97
 90-120    1.3  3.0  4.5  2.9   .9   .3   .0   .0   .0   .0   .0   .0   .0                              12.9     5.02     .13  11.79      2.29
120-150    1.5  3.6  4.7  2.5   .7   .3   .0   .0   .0   .0   .0   .0   .0                              13.1     4.70     .13  12.45      2.30
150-180    1.7  3.9  3.3  1.3   .3   .0   .0   .0   .0   .0   .0   .0   .0                              10.6     4.01     .04  15.44      2.18
180-210    1.2  2.6  2.1   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0                               6.7     3.76     .07  10.62      2.05
210-240    1.4  3.0  2.3   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                               7.4     3.68     .09  14.18      1.95
240-270    1.0  3.5  2.5   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0                               8.1     3.92     .06  10.29      1.88
270-300    1.1  3.0  1.9   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                               6.8     3.79     .13  11.47      1.84
300-330    1.0  2.0  1.7   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                               5.4     3.73     .09  10.59      2.06
330-360    1.0  1.9  1.1  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0                               5.1     4.01     .06  11.37      2.32
CALM       2.2                                                                                           2.2

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT   16.6 32.6 30.0 14.6  4.3  1.5   .2   .0   .0   .0   .0   .0   .0                             100.00
MEAN DIR   179  182  166  151  130   99   70  202    0    0    0    0    0
STD DEV     97   93   89   91   87   49   42   64    0    0    0    0    0
                                             SUMMARY STATISTICS

MEAN SPEED =   4.22 M/S              MAXIMUM =  15.44 M/S           MINIMUM =   .00 M/S             RANGE =  15.44 M/S
           STANDARD DEVIATION =  2.33 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.90 M/S           STANDARD DEVIATION =   3.55 M/S
MEAN Y COMPONENT =    .54 M/S           STANDARD DEVIATION =   3.10 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42010/11          SPANNING  5/ 1  TO 10/31 YEARS: 1981 - 1984     14595 DATA POINTS -  91.1 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN     MAX      STD. DEV.
DEGREES                                                                                                            SPEED   SPEED   SPEED

  0- 30      .4  1.5  1.7   .9   .6   .5   .2   .1   .0   .0   .0   .0   .0                               6.0      5.99     .25   18.21      3.39
 30- 60      .8  1.3  2.2  1.6   .8   .7   .4   .1   .0   .0   .0   .0   .0                               7.9      6.16     .20   15.59      3.44
 60- 90      .5  1.3  2.3  1.8   .8   .3   .1   .0   .0   .0   .0   .0   .0                               7.1      5.67     .07   15.95      2.55
 90-120      .5  1.8  2.8  2.2   .9   .3   .1   .1   .0   .0   .0   .0   .0                               8.6      5.60     .21   18.10      2.66
120-150      .9  2.9  4.0  3.9  2.1   .7   .1   .1   .1   .0   .0   .0   .0                              14.7      5.94     .09   17.88      2.72
150-180     1.2  3.9  5.3  3.5  2.3   .7   .2   .0   .0   .0   .0   .0   .0                              17.1      5.55     .03   17.33      2.65
180-210      .8  3.6  5.3  2.9  1.2   .2   .1   .0   .0   .0   .0   .0   .0                              14.1      5.13   . .06   13.49      2.23
210-240      .8  2.8  4.2  2.1   .4   .1   .0   .0   .0   .0   .0   .0   .0                              10.4      4.82     .04   14.86      2.13
240-270      .5  1.3  1.7   .8   .3   .1   .0   .0   .0   .0   .0   .0   .0                               4.6      4.77     .20   14.17      2.30
270-300      .5   .6   .7   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                               2.1      4.05     .02   14.98      2.07
300-330      .3   .6   .6   .3   .1   .1   .0   .0   .0   .0   .0   .0   .0                               2.0      4.56     .18   12.53      2.64
330-360      .3   .9   .9   .7   .5   .4   .1   .0   .0   .0   .0   .0   .0                               3.9      6.05     .12   14.28      3.27
CALM        1.4                                                                                          1.4

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26


PERCENT     8.8 22.5 31.5 21.0 10.3  4.0  1.3   .5   .1   .0   .0   .0   .0                             100.00
MEAN DIR    167  166  162  152  150  135  119   82  123   61    0    0    0
STD DEV      87   88   77   74   76   97  101   74   38   61    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   5.41 M/S               MAXIMUM =  18.21 M/S          MINIMUM =   .00 M/S           RANGE =  18.21 M/S
          STANDARD DEVIATION =  2.71 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
 MEAN X COMPONENT =  -1.21 M/S           STANDARD DEVIATION =   3.66 M/S
 MEAN Y COMPONENT =   1.70 M/S           STANDARD DEVIATION =   4.34 M/S
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D.2.3 NATIONAL DATA BUOY CENTER (NDBC) CMAN STATIONS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: ALRF1             SPANNING  5/ 1  TO 10/31 YEARS: 1986 - 1987     8025 DATA POINTS -  90.9 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30       .3   .5   .4   .6   .5   .2   .1   .0   .0   .0   .0   .0   .0                              2.7     6.46    .52   17.53       3.37
 30- 60       .4  1.2  1.8  2.2  1.3   .5   .2   .0   .0   .0   .0   .0   .0                              7.7     6.30    .52   16.49       2.97
 60- 90      1.1  4.7 10.2 12.6  6.1  1.8   .2   .0   .0   .0   .0   .0   .0                             36.6     6.27    .52   15.46       2.46
 90-120      1.1  4.9  8.4  7.1  3.2   .8   .1   .0   .0   .0   .0   .0   .0                             25.7     5.63    .52   13.40       2.51
120-150      1.0  3.2  3.5  1.7   .4   .1   .0   .0   .0   .0   .0   .0   .0                             10.0     4.47    .52   14.95       2.33
150-180       .8  1.8  1.5   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0                              4.8     3.99    .52   20.10       2.75
180-210       .6  1.4   .8   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                              3.3     3.75    .52   14.95       2.37
210-240       .7  1.4   .7   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                              3.3     3.58    .26   10.82       2.43
240-270       .2   .3   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                               .8     3.30    .52   10.31       2.44
270-300       .1   .5   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                               .9     3.65    .52    8.25       1.3
300-330       .1   .3   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                               .7     3.72    .52    9.79       2.64
330-360       .1   .2   .2   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0                               .7     4.56    .52    9.28       2.73
CALM         3.0                                                                                          3.0

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      9.5 20.3 28.1 25.7 12.2  3.5   .6   .1   .0   .0   .0   .0   .0                           100.00
MEAN DIR     144  132  111   97   91   84   69  103   35  160  170    0    0
STD DEV       60   57   41   30   31   22   27   57   14    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   5.39 M/S               MAXIMUM =  20.10 M/S            MINIMUM =   .00 M/S            RANGE =  20.10 M/S
            STANDARD DEVIATION =  2.60 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -4.19 M/S            STANDARD DEVIATION =   3.32 M/S
MEAN Y COMPONENT =    .32 M/S            STANDARD DEVIATION =   2.75 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: VENF1             SPANNING  5/ 1  TO 10/31 YEARS: 1987 - 1987     4379 DATA POINTS -  99.2 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                             SPEED   SPEED  SPEED

  0- 30     1.8  5.7  4.7  1.0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               13.2      3.66     .52    8.25      1.90
 30- 60     2.1  9.0  3.7  1.0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               15.8      3.30     .52    8.25      1.89
 60- 90     3.3 15.1  2.8   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                               21.6      2.81     .52   13.40      1.66
 90-120     1.8  5.3  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                8.5      2.79     .52    9.28      1.68
120-150      .5   .9   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                2.2      3.44     .52   10.31      2.21
150-180      .4  1.3  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                2.9      3.55     .52    9.28      1.90
180-210      .4  1.1  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                2.6      3.70     .52   10.31      2.16
210-240      .7  3.9  2.5   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0                                7.8      3.77     .51   18.04      2.26
240-270      .4  3.1  1.5   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                5.3      3.61     .52    9.79      1.77
270-300      .6  3.7  3.7   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                                8.7      3.90     .52    9.79      1.79
300-330      .2  1.5  3.1  2.2   .3   .1   .0   .0   .0   .0   .0   .0   .0                                7.4      5.25     .52   11.86      2.20
330-360      .4   .6  1.2   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0                                3.2      4.77     .52   10.31      2.29
CALM         .7                                                                                            .7

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
 M/S          !    !    !    !    !    !    !    !    !    !    !    !    !
              2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    13.3 51.2 26.9  7.2  1.1   .2   .0   .0   .0   .0   .0   .0   .0                              100.00
MEAN DIR    115  122  163  201  254  282  155    0    0  240    0    0    0
STD DEV      86   90  117  128   97   54   91    0    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   3.49 M/S             MAXIMUM =  18.04 M/S           MINIMUM =   .00 M/S             RANGE =  18.04 M/S
         STANDARD DEVIATION =  1.71 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.32 M/S            STANDARD DEVIATON =  2.91 M/S
MEAN Y COMPONENT =    -.78 M/S            STANDARD DEVIATION =  2.44 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA            STATION: CSBF1              SPANNING  5/ 1  TO 10/31 YEARS: 1985 - 1987    12911 DATA POINTS -  97.5 PERCENT OF TOTAL

DIRECTION FROM                                                                                               PERCENT    MEAN    MIN    MAX       STD. DEV.
DEGREES                                                                                                                 SPEED   SPEED  SPEED

  0- 30    4.6  4.1   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     9.4       2.07    .51   13.92        1.58
 30- 60    5.3  5.4   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                    11.6       2.17    .40   19.07        1.65
 60- 90    2.0  3.4  1.4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     6.9       2.76    .36   17.53        1.86
 90-120    1.9  4.7  1.8   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     8.5       2.92    .36   19.59        1.78
120-150    2.0  2.9   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     5.3       2.22    .44   10.82        1.69
150-180    1.6  4.5  1.4   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     8.1       3.12    .52   12.89        1.97
180-210     .9  2.4  1.3   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     5.2       3.52    .52   11.34        2.09
210-240    1.6  5.9  4.6  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    13.4       3.73    .52   12.37        1.98
240-270     .7  2.6  2.5   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     6.5       3.94    .47   10.31        2.01
270-300    1.0  3.9  3.0  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0                                     9.1       3.85    .51    9.79        2.05
300-330    1.3  1.5   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     3.3       2.32    .52    7.73        1.71
330-360    2.3  1.5   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     4.0       1.71    .52    9.28        1.48
CALM       8.9                                                                                                8.9

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   34.2 42.7 18.1  4.1   .7   .1   .1   .0   .0   .0   .0   .0   .0                                  100.00
MEAN DIR   137  159  197  224  208  138   81  115   80   80    0    0    0
STD DEV    109   93   79   57   76   92   80   66    0   16    0    0    0

                                               SUMMARY STATISTICS

MEAN SPEED =    2.68 //S              MAXIMUM =  19.59 M/S            MINIMUM =    .00 M/S             RANGE =  19.59 M/S
               STANDARD DEVIATION =  1.82 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =     .29 M/S            STANDARD DEVIATION =   2.48 M/S
MEAN Y COMPONENT =     .46 M/S            STANDARD DEVIATION =   2.02 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BURL1             SPANNING  5/ 1  TO 10/31 YEARS: 1985 - 1987     11681 DATA POINTS -  88.2 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30      .9  1.7  2.3  1.8   .9   .3   .1   .0   .0   .0   .0   .0   .0                            8.0      5.37     .52   15.98       2.87
 30- 60     1.0  2.1  2.1  1.5   .7   .2   .1   .0   .0   .0   .0   .0   .0                            7.9      4.93     .48   17.01       2.94
 60- 90     1.1  3.2  3.3  2.6  1.3   .2   .0   .0   .0   .0   .0   .0   .0                           11.7      5.14     .26   22.68       2.92
 90-120     1.2  4.0  5.0  2.9  1.1   .3   .1   .1   .0   .0   .0   .0   .0                           14.6      5.01     .32   23.20       2.85
120-150     1.0  2.9  3.5  1.7   .5   .2   .2   .1   .0   .0   .0   .0   .0                           10.1      4.92     .52   20.62       2.98
150-180     1.4  2.6  2.9  1.6   .5   .3   .2   .1   .0   .0   .0   .0   .0                            9.4      4.73     .52   18.04       2.94
180-210      .8  1.9  1.7   .9   .3   .1   .0   .0   .0   .0   .0   .0   .0                            5.6      4.22     .52   14.43       2.44
210-240     1.3  2.8  3.4  1.8  1.0   .2   .1   .0   .0   .0   .0   .0   .0                           10.6      4.78     .43   20.62       2.74
240-270      .6  1.1  1.1   .6   .2   .1   .1   .0   .0   .0   .0   .0   .0                            3.8      4.59     .05   14.95       2.93
270-300      .6  1.7  1.5   .9   .3   .0   .0   .0   .0   .0   .0   .0   .0                            5.0      4.39     .52   16.49       2.59
300-330      .4  1.2  1.0   .3   .2   .2   .0   .0   .0   .0   .0   .0   .0                            3.3      4.50     .52   12.89       2.85
330-360      .7  1.4  1.6  1.3   .6   .4   .2   .0   .0   .0   .0   .0   .0                            6.1      5.49     .52   15.98       3.14
CALM        3.8                                                                                        3.8

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    14.8 26.5 29.2 18.0  7.5  2.4  1.0   .3   .1   .1   .1   .0   .0                           100.00
MEAN DIR    164  161  156  149  145  176  169  130  140  119  128   88    0
STD DEV      92   89   87   92   96  113  101   74   78   32   42    7    0

                                          SUMMARY STATISTICS

MEAN SPEED =   4.72 M/S              MAXIMUM =  23.20 M/S            MINIMUM =   .00 M/S             RANGE =  23.20 M/S
          STANDARD DEVIATION =  2.84 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.07 M/S           STANDARD DEVIATION =   3.84 M/S
MEAN Y COMPONENT =    .49 M/S           STANDARD DEVIATION =   3.77 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: GDIL1              SPANNING  5/ 1  TO 10/31 YEARS: 1985 - 1987     12090 DATA POINTS -  97.3 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT     MEAN      MIN     MAX       STD. DEV.
DEGREES                                                                                                             SPEED     SPEED   SPEED

  0- 30      .9  2.0  2.5  1.7  1.0   .3   .1   .0   .0   .0   .0   .0   .0                              8.5       5.15      .52    14.95       2.92
 30- 60      .8  2.4  2.4  1.6   .8   .1   .1   .0   .0   .0   .0   .0   .0                              8.2       4.83      .27    14.43       2.71
 60- 90      .7  2.6  3.0  1.8   .3   .2   .0   .0   .0   .0   .0   .0   .0                              8.6       4.74      .40    21.65       2.53
 90-120     1.2  3.5  3.6  2.5   .4   .1   .0   .0   .0   .0   .0   .0   .0                             11.3       4.50      .25    18.04       2.54
120-150     1.4  5.5  4.1  1.6   .3   .1   .1   .0   .0   .0   .0   .0   .0                             13.1       4.06      .33    20.10       2.44
150-180     1.2  5.3  3.5   .9   .3   .1   .0   .0   .0   .0   .0   .0   .0                             11.4       3.84      .26    15.46       2.26
180-210      .9  3.0  2.4   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                              7.0       3.77      .12    12.37       2.20
210-240     1.9  5.3  2.5   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                             10.6       3.39      .34    11.86       1.96
240-270      .8  1.6  1.2   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                              4.1       3.69      .26     9.28       2.27
270-300      .9  1.9  1.5   .4   .1   .1   .0   .0   .0   .0   .0   .0   .0                              5.0       3.85      .46    15.46       2.45
300-330      .9  2.2  1.0   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                              4.6       3.50      .52    14.95       2.25
330-360      .5  1.7   .9   .6   .4   .1   .0   .0   .0   .0   .0   .0   .0                              4.2       4.39      .52    13.40       2.75
CALM        3.3                                                                                          3.3

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    15.4 36.9 20.5 13.4  4.3  1.1   .3   .1   .0   .0   .0   .0   .0                            100.00
MEAN DIR    178  173  152  131  128  119  109  143   87  120  110    0    0
STD DEV      90   83   83   86  107  104   89   72   11   44   19    0    0

                                                    SUMMARY STATISTICS

MEAN SPEED =   4.03 M/S              MAXIMUM =  21.65 M/S           MINIMUM =   .00 M/S             RANGE =  21.65 M/S
            STANDARD DEVIATION =  2.34 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.89 M/S            STANDARD DEVIATION =   3.16 M/S
MEAN Y COMPONENT =    .52 M/S            STANDARD DEVIATION =   3.27 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: SRST2               SPANNING  5/ 1  TO 10/31 YEARS: 1985 - 1987     13211 DATA POINTS -  99.7 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                            SPEED   SPEED  SPEED

  0- 30     1.5  3.4  1.5   .7   .2   .1   .0   .0   .0   .0   .0   .0   .0                               7.3      3.40    .51   12.37     2.34
 30- 60     1.2  4.1  1.9   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                               7.7      3.37    .52   13.40     1.98
 60- 90      .5  1.6   .9   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                               3.6      3.75    .00   15.46     2.30
 90-120      .3  1.1  2.2  1.9   .5   .1   .0   .0   .0   .0   .0   .0   .0                               6.1      5.48    .52   17.53     2.37
120-150      .5  3.2  4.1  2.7  1.4   .3   .0   .0   .0   .0   .0   .0   .0                              12.4      5.32    .52   19.07     2.62
150-180      .8  5.4  8.3  6.0  2.1   .3   .1   .0   .0   .0   .0   .0   .0                              23.1      5.29    .52   16.49     2.38
180-210      .5  2.7  4.4  3.7  1.0   .1   .0   .0   .0   .0   .0   .0   .0                              12.4      5.32    .26   32.47     2.29
210-240      .4  1.9  4.9  4.1   .6   .1   .0   .0   .0   .0   .0   .0   .0                              12.1      5.47    .17   21.13     2.17
240-270      .2   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                .8      3.39    .52   15.46     2.25
270-300      .7  2.4   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               3.4      2.56    .48    5.67     1.52
300-330     1.5  1.5   .3   .1   .2   .0   .0   .0   .0   .0   .0   .0   .0                               3.6      2.63    .17   11.34     2.35
330-360     1.7  2.4   .6   .4   .2   .2   .1   .1   .0   .0   .0   .0   .0                               5.6      3.43    .33   15.46     2.05
CALM        2.0                                                                                             2.0

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   32

PERCENT    11.9 30.1 29.6 20.4  6.4  1.2   .2   .1   .1   .0   .0   .0   .0                              99.99
MEAN DIR    186  162  163  170  170  182  216  240  151  150  210    0  200
STD DEV     126  100   60   49   51   81  101  113   39    0    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   4.58 M/S              MAXIMUM =  32.47 M/S          MINIMUM =   .00 M/S            RANGE =  32.47 M/S
           STANDARD DEVIATION =  2.92 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.48 M/S           STANDARD DEVIATION =   2.75 M/S
MEAN Y COMPONENT =   2.30 M/S           STANDARD DEVIATION =   3.71 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PTAT2             SPANNING  5/ 1  TO 10/31 YEARS: 1985 - 1987     12792 DATA POINTS -  96.6 PERCENT OF TOTAL

DIRECTION FROM                                                                                       PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                         SPEED   SPEED  SPEED

  0- 30      .2  1.1  1.6  1.1   .5   .2   .1   .0   .0   .0   .0   .0   .0                             4.9     5.67     .52   17.01      2.90
 30- 60      .5  1.5  2.0  1.2   .4   .2   .0   .0   .0   .0   .0   .0   .0                             5.9     5.02     .13   14.95      2.60
 60- 90      .5  2.2  3.7  2.0   .8   .3   .0   .0   .0   .0   .0   .0   .0                             9.5     5.22     .52   15.46      2.48
 90-120      .6  4.1  9.0  7.1  2.1   .4   .1   .0   .0   .0   .0   .0   .0                            23.2     5.55     .52   15.46      2.27
120-150      .8  4.8 10.4 11.6  5.8  1.2   .1   .0   .0   .0   .0   .0   .0                            34.7     6.14     .52   16.49      2.37
150-180      .5  2.1  3.9  3.6  1.4   .4   .1   .0   .0   .0   .0   .0   .0                            11.9     5.72     .52   13.92      2.40
180-210      .2   .6   .4   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.5     3.95     .52   14.43      2.27
210-240      .2   .6   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.1     3.06     .52    8.76      1.89
240-270      .1   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                              .3     1.93     .52    4.12      1.63
270-300      .2   .3   .1   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0                              .7     4.11     .52   10.82      2.01
300-330      .2   .6   .3   .2   .2   .1   .0   .0   .0   .0   .0   .0   .0                             1.7     5.16     .52   17.53      3.44
330-360      .4   .8   .8   .7   .4   .2   .0   .0   .0   .0   .0   .0   .0                             3.3     5.41     .44   15.46      3.12
CALM        1.2                                                                                         1.2

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     5.6 18.8 32.5 27.8 11.7  2.9   .5   .1   .0   .0   .0   .0   .0                          100.00
MEAN DIR    159  137  125  131  130  140  135  139  160    0    0    0    0
STD DEV      91   69   48   41   51   71   90  125  143    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   5.57 M/S              MAXIMUM =  17.53 M/S           MINIMUM =   .00 M/S              RANGE =  17.53 M/S
            STANDARD DEVIATION =  2.41 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -3.32 M/S            STANDARD DEVIATION =   2.71 M/S
MEAN Y COMPONENT =   2.08 M/S            STANDARD DEVIATION =   3.75 M/S
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D.2.4 OCEAN CURRENT MEASUREMENT PROGRAM (OCMP) PLATFORM

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: E1331            SPANNING  5/ 1  TO 10/31 YEARS: 1972 - 1976    13306 DATA POINTS -  70.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                     PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                       SPEED   SPEED  SPEED

  0- 30     .8   .9   .7   .7   .7   .3   .1   .0   .0   .0   .0   .0   .0                          4.3      5.85    .02   37.49      3.94
 30- 60     .0  1.2  1.3  1.8   .8   .7   .2   .1   .1   .0   .0   .0   .0                          6.2      6.13    .03   30.14      3.89
 60- 90    1.2  1.7  1.7  1.0   .5   .4   .2   .2   .2   .1   .0   .0   .0                          7.1      5.73    .01   22.40      4.22
 90-120    1.7  2.8  2.5  1.7  1.1   .4   .3   .2   .2   .0   .0   .0   .0                         10.9      5.46    .01   22.25      3.68
120-150    1.5  2.5  2.1  1.8  1.4  1.1   .4   .2   .1   .1   .0   .0   .0                         11.1      6.06    .01   19.91      3.79
150-180    1.5  2.8  2.5  2.0  1.3  1.3   .9   .2   .0   .0   .0   .0   .0                         12.5      6.16    .01   21.40      3.88
180-210    1.1  2.5  2.5  1.7  1.0   .6   .2   .1   .0   .0   .0   .0   .0                          9.7      5.45    .00   15.75      3.16
210-240    1.1  2.0  2.2  1.3   .9   .3   .1   .0   .0   .0   .0   .0   .0                          7.9      5.05    .01   20.90      2.96
240-270    1.2  2.1  1.7  1.5   .9   .1   .1   .1   .0   .0   .0   .0   .0                          7.7      4.95    .01   20.73      3.08
270-300    1.4  2.6  1.9  1.3  1.0   .4   .3   .2   .2   .2   .1   .1   .4                          9.9      6.74    .01   33.66      5.53
300-330    1.4  2.1  2.1  1.7   .7   .5   .2   .1   .0   .0   .0   .0   .0                          8.8      5.22    .02   17.79      3.30
330-360     .9   .9   .9   .7   .4   .1   .1   .1   .0   .0   .0   .0   .0                          4.0      4.94    .01   19.68      3.5[illegible]
CALM        .0                                                                                      .0

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   37


PERCENT    14.6 24.1 22.1 16.3 10.6  6.2  3.0  1.4   .7   .4   .1   .1   .4                        100.00
MEAN DIR    183  186  185  184  175  162  166  174  154  199  237  232  241
STD DEV      97   90   89   91   91   87   88   86   95  100   66   87   95

                                            SUMMARY STATISTICS

MEAN SPEED =   5.70 M/S               MAXIMUM =  37.49 M/S            MINIMUM =   .00 M/S             RANGE =  37.48 M/S
           STANDARD DEVIATION =  3.94 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.19 M/S             STANDARD DEVIATION =   5.09 M/S
MEAN Y COMPONENT =    .94 M/S             STANDARD DEVIATION =   4.61 M/S
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D.3

TRANSITION PERIODS (APRIL AND NOVEMBER)

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D.3.1 NATIONAL WEATHER SERVICE (NWS) COASTAL STATIONS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA         STATION: KEY WEST          SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30      .4  2.0  3.3  2.5   .6   .1   .0   .0   .0   .0   .0   .0   .0                              8.8      5.24     .34   15.43      2.16
 30- 60      .4  2.5  2.7  2.2   .4   .0   .0   .0   .0   .0   .0   .0   .0                              8.2      4.85     .51   10.29      2.22
 60- 90      .3  2.3  4.2  3.5  1.1   .0   .0   .0   .0   .0   .0   .0   .0                             11.4      5.45     .26   10.80      2.09
 90-120      .2  2.5  7.1 10.0  3.7   .3   .0   .0   .0   .0   .0   .0   .0                             23.8      6.26     .51   12.86      2.04
120-150      .2  3.2  8.0  6.5  1.6   .3   .0   .0   .0   .0   .0   .0   .0                             19.8      5.64     .74   12.35      2.07
150-180      .3  2.3  3.4  1.8   .2   .0   .0   .0   .0   .0   .0   .0   .0                              8.0      4.80     .38   11.83      1.95
180-210      .1  1.2  1.1   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0                              3.2      4.63     .17   11.19      1.89
210-240      .2  1.3  1.4   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                              3.6      4.41     .51   12.86      2.03
240-270      .1   .6   .7   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                              1.8      4.58     .38   11.54      2.25
270-300      .2   .6   .3   .3   .2   .0   .0   .0   .0   .0   .0   .0   .0                              1.6      4.63     .51   11.64      2.70
300-330      .2   .8  1.1   .7   .2   .1   .0   .0   .0   .0   .0   .0   .0                              3.2      5.09     .86   11.29      2.47
330-360      .1  1.3  2.2  1.7   .4   .0   .0   .0   .0   .0   .0   .0   .0                              5.7      5.31     .60   10.77      1.99
CALM        1.0                                                                                           1.0

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     3.8 20.5 35.3 30.7  8.7  1.0   .0   .0   .0   .0   .0   .0   .0                             99.99
MEAN DIR    154  145  136  127  127  155  125    0    0    0    0    0    0
STD DEV     105   91   82   74   71   80   77    0    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =    5.40 M/S              MAXIMUM =  15.43 M/S            MINIMUM =    .00 M/S              RANGE =  15.43 M/S
            STANDARD DEVIATION =  2.03 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.76M/S             STANDARD DEVIATION =   3.44 M/S
MEAN Y COMPONENT =    .72 M/S             STANDARD DEVIATION =  3.65 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA           STATION: KEY WEST             SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                              PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                                SPEED   SPEED  SPEED

  0- 30      .3  2.8  4.2  3.9  1.8   .4   .1   .0   .0   .0   .0   .0   .0                                   13.6     5.81    .51  16.46      2.49
 30- 60      .6  5.4  8.7  7.8  2.2   .3   .0   .0   .0   .0   .0   .0   .0                                   25.0     5.46    .51  11.32      2.10
 60- 90      .3  4.3  8.5  5.6  1.2   .1   .0   .0   .0   .0   .0   .0   .0                                   19.9     5.32    .26  15.43      1.91
 90-120      .3  2.1  6.2  5.5  1.0   .0   .0   .0   .0   .0   .0   .0   .0                                   15.2     5.63    .24  18.09      1.96
120-150      .2  2.0  3.7  2.7   .3   .1   .0   .0   .0   .0   .0   .0   .0                                    9.1     5.36    .49  19.55      2.36
150-180      .3  1.6  1.6   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                                    3.9     4.12    .51  11.96      1.97
180-210      .2   .7   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                    1.6     4.04    .45   8.89      1.80
210-240      .1   .7   .7   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    1.7     4.17    .51  10.29      2.24
240-270      .1   .5   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                    1.0     3.26    .51   6.69      1.07
270-300      .2   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                    1.0     2.90    .51   8.87      1.47
300-330      .2  1.1   .7   .2   .2   .0   .0   .0   .0   .0   .0   .0   .0                                    2.5     4.35    .47  10.43      2.20
330-360      .2  1.1  1.2  1.1   .8   .1   .0   .0   .0   .0   .0   .0   .0                                    4.5     5.69    .51  12.86      2.62
CALM        1.1                                                                                                1.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     4.1 22.9 36.4 27.5  7.6  1.1   .2   .1   .0   .1   .0   .0   .0                                 100.00
MEAN DIR    146  119   99   89   98   84  129   78  106  126    0    0    0
STD DEV     103   93   71   67   99   98  124   51   65   20    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =    5.20 M/S              MAXIMUM =  19.55 M/S            MINIMUM =   .00 M/S             RANGE =  19.55 M/S
           STANDARD DEVIATION =  2.11 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -3.20 M/S             STANDARD DEVIATION =   2.85 M/S
MEAN Y COMPONENT =  -1.20 M/S             STANDARD DEVIATION =   3.51 M/S
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395

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: FTMEYER            SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30     .6  3.1  2.2   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                               6.9      3.89     .00   10.79      2.06
 30- 60     .7  5.5  2.9  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                              10.5      3.82     .24   10.29      2.03
 60- 90     .8  5.7  4.0  2.0   .4   .0   .0   .0   .0   .0   .0   .0   .0                              12.9      4.15     .51   10.80      2.13
 90-120    1.1  5.4  3.8  1.7   .3   .0   .0   .0   .0   .0   .0   .0   .0                              12.3      3.98     .34   10.80      2.15
120-150    1.0  3.6  1.9   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                               7.3      3.55     .34    9.26      2.03
150-180     .8  2.0  1.7   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0                               5.4      4.03     .24   10.80      2.22
180-210     .4  1.7  1.9  1.5   .4   .0   .0   .0   .0   .0   .0   .0   .0                               5.8      4.04     .48   10.79      2.26
210-240     .7  2.7  3.4  1.8   .4   .0   .0   .0   .0   .0   .0   .0   .0                               9.1      4.61     .24   23.64      2.28
240-270     .2  1.3  1.7   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                               4.1      4.63     .53   14.85      2.21
270-300     .2  1.7  2.1  1.3   .3   .0   .0   .0   .0   .0   .0   .0   .0                               5.7      4.81     .00   20.58      2.20
300-330     .4  2.1  2.4  1.5   .3   .0   .0   .0   .0   .0   .0   .0   .0                               6.9      4.68     .47   11.82      2.35
330-360     .4  2.4  2.2   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.7      4.05     .43    9.26      1.96
CALM       7.5                                                                                             7.5

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   14.9 37.3 30.3 14.6  2.7   .2   .0   .0   .0   .0   .0   .0   .0                              99.99
MEAN DIR   149  145  169  178  183  194    0  266    0    0  270  230    0
STD DEV     90   98  101   98   93  107    0  108    0    0    0    0    0

                                          SUMMARY STATISTICS

MEAN SPEED =   3.88 M/S               MAXIMUM =  23.64 M/S           MINIMUM =    .00 M/S             RANGE =  23.64 M/S
           STANDARD DEVIATION =  2.14 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.44 M/S          STANDARD DEVIATION =   3.31 M/S
MEAN Y COMPONENT =     .09 M/S          STANDARD DEVIATION =   2.91 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: FTMEYER           SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                   PERCENT    MEAN     MIN    MAX       STD. DEV.
DEGREES                                                                                                     SPEED   SPEED  SPEED

  0- 30     .7  7.9  7.2  2.9   .3   .0   .0   .0   .0   .0   .0   .0   .0                          19.0      4.23     .24   11.82      2.05
 30- 60    1.3 10.9  5.3  1.8   .3   .0   .0   .0   .0   .0   .0   .0   .0                          19.6      3.70     .51   11.32      2.01
 60- 90    1.3  8.3  4.6  1.8   .2   .0   .0   .0   .0   .0   .0   .0   .0                          16.2      3.78     .51   10.29      1.98
 90-120     .8  4.3  2.3   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                           8.3      3.65     .34   10.29      2.05
120-150     .6  3.0  1.6   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                           5.5      3.37     .51    8.74      1.88
150-180     .4  1.9  1.3   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0                           4.1      3.76     .51    9.26      2.06
180-210     .2   .9  1.0   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0                           2.7      4.34     .17    9.25      2.17
210-240     .3  1.4  1.4   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                           3.6      3.99     .51   10.80      2.08
240-270     .2   .7   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                           1.3      3.27     .47    8.22      1.91
270-300     .5  1.0  1.0   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           2.7      3.55     .34   10.29      2.00
300-330     .3  1.1  1.1   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                           3.2      4.34     .51   12.35      2.23
330-360     .4  1.8  2.3  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0                           5.8      4.62     .51   11.31      2.17
CALM       0.0                                                                                       0.0

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT   15.1 43.1 29.4 10.9  1.3   .2   .0   .0   .0   .0   .0   .0   .0                         100.00
MEAN DIR   137  102  116  118  142  154  310    0    0    0    0    0    0
STD DEV     96   87  105  111  127  137    0    0    0    0    0    0    0

                                                     SUMMARY STATISTICS

MEAN SPEED =   3.59 M/S              MAXIMUM =  12.35 M/S            MINIMUM =   .00 M/S            RANGE =  12.35 M/S
            STANDARD DEVIATION =  1.94 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.34 M/S            STANDARD DEVIATION =   2.43 M/S
MEAN Y COMPONENT =  -1.14 M/S            STANDARD DEVIATION =   2.77 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: TAMPA            SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30      .5  3.3  2.0   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0                             6.3     3.62    1.54   10.80      1.96
 30- 60      .7  3.6  2.0   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0                             7.2     3.68    1.54    9.26      2.05
 60- 90     1.0  6.5  4.5  1.5   .1   .0   .0   .0   .0   .0   .0   .0   .0                            13.5     3.80    1.03    8.74      2.00
 90-120      .5  4.6  4.0  1.9   .1   .0   .0   .0   .0   .0   .0   .0   .0                            11.0     4.17     .51    9.26      2.08
120-150      .3  3.1  3.5  1.2   .0   .0   .0   .0   .0   .0   .0   .0   .0                             8.1     4.24    1.54    8.23      1.98
150-180      .2  2.5  2.0   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0                             5.4     4.02    1.03   11.31      1.94
180-210      .1  1.3  1.7  1.2   .2   .0   .0   .0   .0   .0   .0   .0   .0                             4.6     4.95    1.54    9.77      2.09
210-240      .1  3.3  3.3  1.5   .1   .0   .0   .0   .0   .0   .0   .0   .0                             8.4     4.43    1.54   11.32      2.04
240-270      .1  1.5  2.4   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                             4.7     4.46    1.03    9.26      1.89
270-300      .2  2.2  4.7  2.6   .4   .0   .0   .0   .0   .0   .0   .0   .0                            10.1     5.00    1.54   10.80      1.95
300-330      .3  4.3  2.9  1.3   .2   .0   .0   .0   .0   .0   .0   .0   .0                             9.0     4.14    1.03   11.32      2.18
330-360      .4  2.5  1.6   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0                             5.6     4.02    1.03   11.32      2.16
CALM        6.2                                                                                           6.2

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    10.5 30.9 34.5 14.5  1.5   .1   .0   .0   .0   .0   .0   .0   .0                           100.00
MEAN DIR    141  163  179  192  226  261    0    0    0    0    0    0    0
STD DEV     100  103   98   98   99  103    0    0    0    0    0    0    0

                                                   SUMMARY STATISTICS

MEAN SPEED =   3.94 M/S              MAXIMUM =  11.32 M/S            MINIMUM =   .00 M/S            RANGE =  11.32 M/S
            STANDARD DEVIATION =  1.91M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.07 M/S           STANDARD DEVIATION =   3.41 M/S
MEAN Y COMPONENT =    .19 M/S           STANDARD DEVIATION =   2.74 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: TAMPA              SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                                PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                                  SPEED   SPEED  SPEED

  0- 30        .9  7.8  5.1  1.8   .2   .0   .0   .0   .0   .0   .0   .0   .0                                  15.9      3.92    1.03   10.79      2.05
 30- 60        .9  9.7  5.4  1.3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  17.4      3.62    1.03   13.37      1.92
 60- 90       1.1 10.8  4.9  1.2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  18.0      3.46    1.03    8.74      1.89
 90-120        .6  5.5  2.9   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   9.6      3.52    1.03    8.23      1.84
120-150        .3  3.5  2.6   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   7.0      3.77    1.54    8.23      1.92
150-180        .2  2.5  1.4   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   4.5      3.58    1.03    8.23      1.82
180-210        .2  1.2  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   2.8      3.85    1.54    8.74      1.90
210-240        .3  2.2   .9   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   3.7      3.34    1.54    8.23      1.87
240-270        .1  1.2   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   1.9      3.57    1.54    9.77      1.68
270-300        .2  1.6  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   3.1      3.78    1.03    8.74      1.89
300-330        .3  2.3  1.1   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   4.3      3.83    1.03   10.29      2.23
330-360        .3  2.9  2.1  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                                   6.7      4.32    1.03   11.83      2.19
CALM          5.1                                                                                               5.1

 SPEED          0    2    4    6    8   10   12   14   16   18   20   22   24
                !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S            2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      10.7 51.3 29.1  8.1   .8   .1   .0   .0   .0   .0   .0   .0   .0                                 100.00
MEAN DIR      128  120  123  134  197  223   60    0    0    0    0    0    0
STD DEV        99   95   99  119  150  175    0    0    0    0    0    0    0

                                                   SUMMARY STATISTICS

MEAN SPEED =   3.51 M/S             MAXIMUM =  13.37 M/S           MINIMUM =   .00 M/S             RANGE =  13.37 M/S
             STANDARD DEVIATION =  1.68 M/S

IN A COORDIATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.25 M/S           STANDARD DEVIATION =  2.45 M/S
MEAN Y COMPONENT =   -.81 M/S           STANDARD DEVIATION =  2.63 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PENSACOL            SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                              PERCENT    MEAN     MIN    MAX      STD. DEV.
DEGREES                                                                                                                SPEED   SPEED  SPEED

  0- 30     1.1  5.0  2.6   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     9.7     3.64     .00   10.80       1.97
 30- 60      .6  3.2  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     5.1     3.19     .31    7.72       1.70
 60- 90      .5  2.9  1.5   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     5.2     3.46     .51    7.72       1.63
 90-120      .4  2.6  3.2  2.0   .6   .1   .0   .0   .0   .0   .0   .0   .0                                     8.8     4.09     .51   11.32       2.34
120-150      .3  3.0  5.4  4.0   .8   .1   .0   .0   .0   .0   .0   .0   .0                                    13.6     5.26     .51   12.85       2.15
150-180      .6  3.2  5.1  2.3   .4   .0   .0   .0   .0   .0   .0   .0   .0                                    11.7     4.72     .51   12.34       2.02
180-210      .4  2.2  3.5  1.6   .2   .0   .0   .0   .0   .0   .0   .0   .0                                     7.8     4.68     .45   10.79       1.92
210-240      .5  3.3  3.4  2.1   .4   .1   .0   .0   .0   .0   .0   .0   .0                                     9.8     4.62     .51   13.37       2.27
240-270      .3  1.9  1.1   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     4.1     4.14     .52   10.28       2.18
270-300      .6  2.0  1.1   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     4.2     3.63     .44   12.34       2.09
300-30       .5  2.5  1.6   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0                                     5.7     4.05     .51   10.29       2.16
330-360      .6  4.2  2.6  1.4   .3   .0   .0   .0   .0   .0   .0   .0   .0                                     9.1     4.09     .28   10.29       2.23
CALM        5.1                                                                                                 5.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    11.8 35.9 32.2 16.5  3.0   .5   .1   .0   .0   00   .0   .0   .0                                    99.99
MEAN DIR    168  171  174  181  184  166  199    0    0    0    0    0    0
STD DEV     112  110   87   81   78   77   59    0    0    0    0    0    6

                                                  SUMMARY STATISTICS

MEAN SPEED =   4.14 M/S              MAXIMUM =  13.37 M/S           MINIMUM =   .00 M/S             RANGE =  13.37 M/S
            STANDARD DEVIATION =  2.11 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.37 M/S            STANDARD DEVIATION =   2.96 M/S
MEAN Y COMPONENT =    .94 M/             STANDARD DEVIATION =   3.44 M/S
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400

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PENSACOL          SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                              PERCENT    MEAN    MIN     MAX      S/D. DEV.
DEGREES                                                                                                SPEED   SPEED   SPEED

  0- 30     1.2  8.4  6.0  2.0   .2   .0   .0   .0   .0   .0   .0   .0   .0                   17.8      3.93    .51     9.77      1.95
 30- 60      .9  6.4  2.9   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                   10.4      3.33    .51     8.23      1.65
 60- 90      .8  6.5  2.8   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                   10.5      3.40    .51     9.26      1.58
 90-120      .6  4.1  3.8  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0                    9.8      4.11    .51    10.29      1.89
120-150      .6  3.2  3.0  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0                    8.1      4.19    .51     9.25      1.85
150-180      .4  1.7  1.7  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0                    5.2      4.52    .51     9.26      2.15
180-210      .2   .8   .9   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0                    2.5      4.46    .67    10.29      2.14
210-240      .3  1.4   .8   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0                    3.2      3.88    .51    10.29      2.24
240-270      .3   .9   .4   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                    2.0      3.69    .48     9.77      2.23
270-300      .5  1.3   .9   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0                    3.3      3.81    .51     8.74      2.11
300-330      .7  2.9  1.8   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                    6.4      3.85    .34    11.31      2.15
330-360      .8  6.1  5.4  2.7   .4   .1   .0   .0   .0   .0   .0   .0   .0                   15.4      4.38    .24    12.35      2.08
CALM        5.4                                                                                5.4

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    12.8 43.8 30.5 11.6  1.2   .1   .0   .0   .0   .0   .0   .0   .0                  100.00
MEAN DIR    161  141  154  188  212  276  350    0    0    0    0    0    0
STD DEV     116  118  120  121  128   92    0    0    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =    3.73 M/S             MAXIMUM =  12.35 M/S           MINIMUM =   .00 M/S            RANGE =  12.35 M/S
           STANDARD DEVIATION =  1.87 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.73 M/S           STANDARD DEVIATION =   2.52 M/S
MEAN Y COMPONENT =    -.99 M/S           STANDARD DEVIATION =   3.10 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA           STATION: MOBILE              SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30     .5  3.6  3.1  1.4   .3   .0   .0   .0   .0   .0   .0   .0   .0                             8.9      4.23    .26   10.29      2.18
 30- 60     .8  4.0  1.7   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                             6.9      3.41    .34    9.26      1.85
 60- 90     .6  2.9  1.7   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                             5.5      3.61    .51   11.31      1.89
 90-120     .4  2.6  2.1   .9   .3   .0   .0   .0   .0   .0   .0   .0   .0                             6.3      4.32    .51   12.35      2.17
120-150     .5  4.4  4.4  3.3  1.1   .2   .0   .0   .0   .0   .0   .0   .0                            13.9      4.97    .64   13.89      2.49
150-180     .8  5.4  5.0  3.9  1.2   .2   .1   .0   .0   .0   .0   .0   .0                            16.5      4.89    .34   13.88      2.47
180-210     .4  2.4  2.8  2.0   .7   .1   .0   .0   .0   .0   .0   .0   .0                             8.4      5.03    .36   11.32      2.38
210-240     .5  3.2  2.9  1.6   .4   .0   .0   .0   .0   .0   .0   .0   .0                             8.       4.52    .51   14.39      2.25
240-270     .5  1.7   .8   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                             3.3      3.66    .28   13.36      2.33
270-300     .6  2.2  1.4   .4   .2   .0   .0   .0   .0   .0   .0   .0   .0                             4.8      3.73    .48    9.77      2.18
300-330     .6  3.0  2.1  1.5   .4   .0   .0   .0   .0   .0   .0   .0   .0                             7.7      4.42    .51   10.29      2.32
330-360     .5  2.4  1.9  1.0   .3   .0   .0   .0   .0   .0   .0   .0   .0                             6.0      4.33    .20   12.35      2.32
CALM       3.1                                                                                         3.1

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    9.6 37.7 29.7 17.1  5.0   .7   .1   .0   .0   .0   .0   .0   .0                           100.00
MEAN DIR   176  166  168  177  185  181  178  210    0    0    0    0    0
STD DEV    104   98   93   82   77   51   45    0    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =    4.30 M/S              MAXIMUM =  14.39 M/S           MINIMUM =   .00 M/S             RANGE =  14.39 M/S
            STANDARD DEVIATION =  2.15 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.30 M/S           STANDARD DEVIATION =   2.84 M/S
MEAN Y COMPONENT =   1.08 M/S           STANDARD DEVIATION =   3.71 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DAT          STATION: MOBILE             SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                            PERCENT    MEAN    MIN    MAX       STD. DEV.
DEGREES                                                                                                              SPEED   SPEED  SPEED

  0- 30      1.0  6.3  6.5  2.5   .6   .1   .0   .0   .0   .0   .0   .0   .0                                16.9     4.38    .34   11.32        2.09
 30- 60      1.1  7.1  2.8   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                                11.7     3.43    .34    9.26        1.76
 60- 90       .7  4.2  2.1   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 7.3     3.47    .69   10.29        1.80
 90-120       .4  3.7  2.5   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0                                 7.6     3.92    .94    9.25        2.04
120-150       .8  4.7  3.9  1.4   .4   .0   .0   .0   .0   .0   .0   .0   .0                                11.2     4.19    .17   13.36        2.14
150-180       .6  3.8  2.9  1.5   .5   .1   .0   .0   .0   .0   .0   .0   .0                                 9.4     4.41    .51   15.42        2.34
180-210       .2  1.7   .8   .6   .3   .0   .0   .0   .0   .0   .0   .0   .0                                 3.7     4.39    .85   14.39        2.46
210-240       .4  1.8  1.1   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                                 4.0     3.97    .69    9.26        2.13
240-270       .3  1.1   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 2.2     3.41    .51    9.26        1.97
270-300       .5  1.8  1.0   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 3.7     3.59    .55    8.74        1.98
300-330       .8  3.2  2.6  1.2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                 7.9     4.06    .18   10.79        2.13
330-360       .6  3.2  3.5  1.8   .4   .1   .0   .0   .0   .0   .0   .0   .0                                 9.6     4.57    .51   10.29        2.21
CALM         4.8                                                                                           4.8

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     12.2 42.6 30.1 12.0  2.8   .3   .0   .0   .0   .0   .0   .0   .0                               100.00
MEAN DIR     162  143  149  167  166  172  173  185    0    0    0    0    0
STD DEV      110  106  114  118  112  107   58   57    0    0    0    0    0

                                        SUMMARY STATISTICS

MEAN SPEED =   3.87 M/S              MAXIMUM =  15.42 M/S            MINIMUM =    .00 M/S             RANGE =  15.42 M/S
             STANDARD DEVIATION =  1.96 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.64 M/S           STANDARD DEVIATION =   2.51 M/S
MEAN Y COMPONENT =    -.33 M/S           STANDARD DEVIATION =   3.44 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BOOTHVL          SPANNING  4/ 1  TO  4/30 YEARS: 1972 - 1986     8617 DATA POINTS -  79.8 PERCENT OF TOTAL

 DIRECTION FROM                                                                              PERCENT    MEAN    MIN    MAX       STD. DEV.
 DEGREES                                                                                                SPEED   SPEED  SPEED

   0- 30      .8  2.4  2.3  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0                  7.0      4.40    .26   13.37       2.20
  30- 60      .8  2.8  2.3  1.5   .4   .0   .0   .0   .0   .0   .0   .0   .0                  7.9      4.42    .17   10.29       2.31
  60- 90     1.0  3.5  3.4  1.2   .2   .0   .0   .0   .0   .0   .0   .0   .0                  9.2      4.14    .51   10.80       1.98
  90-120     1.5  6.0  4.3  2.0   .3   .1   .0   .0   .0   .0   .0   .0   .0                 14.1      4.04    .26   12.35       2.18
 120-150     1.6  6.3  5.5  2.6   .5   .2   .0   .0   .0   .0   .0   .0   .0                 16.8      4.27    .18   12.06       2.25
 150-180      .7  4.1  4.3  3.8  1.4   .3   .0   .0   .0   .0   .0   .0   .0                 14.6      5.25    .34   12.06       2.40
 180-210      .2  1.4  1.6  1.2   .4   .1   .0   .0   .0   .0   .0   .0   .0                  4.8      5.08    .34   11.32       2.20
 210-240      .3  1.4  1.6  1.2   .3   .1   .0   .0   .0   .0   .0   .0   .0                  4.9      4.92    .52   11.32       2.40
 240-270      .3  1.1  1.1  1.0   .3   .0   .0   .0   .0   .0   .0   .0   .0                  3.8      5.01    .15   10.80       2.38
 270-300      .6  1.4  1.2   .7   .4   .1   .0   .0   .0   .0   .0   .0   .0                  4.5       4.6    .26   12.35       2.66
 300-330      .5  1.3  1.3  1.1   .3   .1   .0   .0   .0   .0   .0   .0   .0                  4.6      4.87    .26   12.34       2.54
 330-360      .3  1.3  1.5   .9   .3   .1   .0   .0   .0   .0   .0   .0   .0                  4.4      4.88    .26   12.06       2.49
 CALM        3.4                                                                              3.4

  SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
  M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

 PERCENT    12.0 32.9 30.3 18.3  5.2  1.2   .1   .0   .0   .0   .0   .0   .0                100.00
 MEAN DIR    145  144  151  165  180  190  189    0    0    0    0    0    0
 STD DEV      89   82   85   85   87   85  114    0    0    0    0    0    0

                                               SUMMARY STATISTICS

 MEAN SPEED =   4.41 M/S              MAXIMUM =  13.37 M/S           MINIMUM =   .00 M/S            RANGE =  13.37 M/S
            STANDARD DEVIATION =  2.20 M/S

 IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
 MEAN X COMPONENT =  -1.04 M/S            STANDARD DEVIATION =   3.22 M/S
 MEAN Y COMPONENT =    .92 M/S            STANDARD DEVIATION =   3.52 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BOOTHVL            SPANNING 11/ 1  TO 11/30 YEARS: 1971 - 1986     7920 DATA POINTS -  68.8 PERCENT OF TOTAL

DIRECTION FROM                                                                                       PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                         SPEED   SPEED  SPEED

  0- 30       1.3  4.9  6.4  5.0  2.6   .6   .0   .0   .0   .0   .0   .0   .0                          20.8      5.33    .26   11.83      2.59
 30- 60       1.0  4.5  5.2  3.1   .7   .1   .0   .0   .0   .0   .0   .0   .0                          14.6      4.66    .29   11.31      2.26
 60- 90       1.4  5.1  2.6   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                           9.5      3.20    .34    7.72      1.73
 90-120       1.5  6.9  2.0   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                          10.8      3.13    .34   15.42      1.77
120-150       1.6  6.2  3.4  1.0   .1   .0   .0   .0   .0   .0   .0   .0   .0                          12.3      3.55    .22   11.83      1.87
150-180       1.0  3.7  3.2  1.5   .5   .0   .0   .0   .0   .0   .0   .0   .0                           9.9      4.32    .29   12.86      2.22
180-210        .1  1.4  1.0   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                           2.8      3.99   1.03    8.74      1.94
210-240        .3  1.2   .6   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                           2.4      3.68    .29    9.77      2.07
240-270        .1   .5   .3   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           1.1      4.16    .24    8.74      2.29
270-300        .4   .8   .4   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                           1.9      3.69    .51    8.74      2.28
300-330        .6  1.3  1.2   .6   .2   .0   .0   .0   .0   .0   .0   .0   .0                           3.9      4.16    .26   10.80      2.41
330-360        .5  1.8  2.4  1.6   .5   .1   .0   .0   .0   .0   .0   .0   .0                           6.9      4.08    .29   10.53      2.42
CALM          3.2                                                                                       3.2

 SPEED          0    2    4    6    8   10   12   14   16   18   20   22   24
                !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S            2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      13.0 38.1 28.7 14.6  4.7   .8   .0   .0   .0   .0   .0   .0   .0                         100.00
MEAN DIR      134  126  122  115   93   59  141  110    0    0    0    0    0
STD DEV        93   84  101  115  119   96   37    0    0    0    0    0    0

                                                 SUMMARY STATISTICS

MEAN SPEED =   4.11 M/S              MAXIMUM =  15.42 M/S            MINIMUM =   .00 M/S              RANGE =  15.42 M/S
           STANDARD DEVIATION =  2.18 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.36 M/S           STANDARD DEVIATION =   2.31 M/S
MEAN Y COMPONENT =  -1.08 M/S           STANDARD DEVIATION =   3.68 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PORTARTH          SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                            PERCENT   MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                             SPEED   SPEED  SPEED

  0- 30      .5  2.7  2.7  1.3   .2   .1   .0   .0   .0   .0   .0   .0   .0                 7.5     4.47    .43   13.37       2.14
 30- 60      .5  2.1  2.1  1.1   .1   .0   .0   .0   .0   .0   .0   .0   .0                 5.9     4.35    .51    9.26       2.03
 60- 90      .6  1.8  2.3  1.3   .1   .0   .0   .0   .0   .0   .0   .0   .0                 6.1     4.41    .51    8.74       2.03
 90-120      .4  2.8  4.0  2.8   .4   .0   .0   .0   .0   .0   .0   .0   .0                10.4     4.97    .00   11.32       1.99
120-150      .5  2.9  6.1  7.3  2.1   .6   .0   .0   .0   .0   .0   .0   .0                19.4     5.92    .18   12.86       2.25
150-180      .5  4.1  6.6  7.4  2.2   .5   .1   .0   .0   .0   .0   .0   .0                21.4     5.74    .51   14.92       2.38
180-210      .4  ..0  2.2  1.8   .7   .0   .0   .0   .0   .0   .0   .0   .0                 7.1     5.07    .51   12.34       2.32
210-240      .6  2.4   .9   .5   .2   .1   .0   .0   .0   .0   .0   .0   .0                 4.6     3.76    .36   11.83       2.4[illegible]
240-270      .4  1.0   .4   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                 2.1     3.28    .51    8.23       2.03
270-300      .4  1.3  1.0   .4   .2   .0   .0   .0   .0   .0   .0   .0   .0                 3.3     4.21    .45   11.82       2.42
300-330      .5  1.6  1.5  1.2   .4   .1   .0   .0   .0   .0   .0   .0   .0                 5.4     4.81    .34   11.32       2.46
330-360      .4  1.8  1.8  1.3   .2   .0   .0   .0   .0   .0   .0   .0   .0                 5.4     4.69    .64   10.28       2.12
CALM        1.3                                                                             1.3

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     7.0 26.4 31.6 26.6  6.7  1.5   .1   .0   .0   .0   .0   .0   .0                99.99
MEAN DIR    177  163  152  157  170  167  151  162    0    0    0    0    0
STD DEV      99   95   84   70   62   50   23   34    0    0    0    0    0

                                         SUMMARY STATISTICS

MEAN SPEED =   5.01 M/S             MAXIMUM =  14.92 M/S            MINIMUM =   .00 M/S            RANGE =  14.92 M/S
          STANDARD DEVIATION =  2.22 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.36 M/S           STANDARD DEVIATION =   3.01 M/S
MEAN Y COMPONENT =   1.75 M/S           STANDARD DEVIATION =   4.01 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PORTARTH           SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                         PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                           SPEED   SPEED  SPEED

  0- 30     1.0  5.9  5.0  2.8   .7   .1   00   .0   .0   .0   .0   .0   .0                             15.5      4.49     .20   25.72       2.25
 30- 60      .8  4.0  3.3  1.2   .2   .0   .0   .0   .0   .0   .0   .0   .0                              9.7      4.07     .34   17.99       2.09
 60- 90      .6  3.7  3.3  1.2   .2   .0   .0   .0   .0   .0   .0   .0   .0                              9.0      4.13     .24   11.83       2.02
 90-120      .6  4.0  4.0  1.4   .1   .0   .0   .0   .0   .0   .0   .0   .0                             10.1      4.21     .28    9.77       1.86
120-150      .8  3.2  4.0  2.9   .5   .1   .0   .0   .0   .0   .0   .0   .0                             11.5      4.80     .51   11.32       2.22
150-180      .7  3.0  3.5  2.7   .6   .1   .0   .0   .0   .0   .0   .0   .0                             10.7      4.93     .00   12.35       2.29
180-210      .5  1.5  1.4   .8   .3   .0   .0   .0   .0   .0   .0   .0   .0                              4.6      4.58     .34   10.79       2.35
210-240      .6  1.4   .6   .4   .2   .0   .0   .0   .0   .0   .0   .0   .0                              3.2      3.82     .17   10.79       2.46
240-270      .4  1.0   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                              1.9      3.15     .69    8.23       1.95
270-300      .6  1.7   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                              3.3      3.36     .37    9.77       1.81
300-330      .6  2.5  1.9  1.5   .4   .0   .0   .0   .0   .0   .0   .0   .0                              6.9      4.52     .51   10.29       2.34
330-360      .8  3.0  3.6  3.0   .5   .0   .0   .0   .0   .0   .0   .0   .0                             10.9      4.83     .34   10.80       2.23
CALM        2.7                                                                                           2.7

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    10.6 35.1 31.8 18.3  3.8   .4   .0   .0   .0   .0   .0   .0   .0                           100.00
MEAN DIR    169  146  145  166  169  153   90    0   30   29    0    0   30
STD DEV     109  108  106  113  111   93  106    0    0    0    0    0    0

                                            SUMMARY STATISTICS

MEAN SPEED =   4.31 M/S              MAXIMUM =  25.72 M/S           MINIMUM =    .00 M/S             RANGE =  25.72 M/S
            STANDARD DEVIATION =  2.08 M/S

IN A COORDINATE SYSEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.97 M/S            STANDARD DEVIATION =   2.75 M/S
MEAN Y COMPONENT =   -.37 M/S            STANDARD DEVIATION =   3.77 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: CORPUS            SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                       PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                         SPEED   SPEED  SPEED

  0- 30       .3  1.5  2.9  2.7  1.3   .4   .0   .0   .0   .0   .0   .0   .0                              9.0       5.93    .00   12.86       2.40
 30- 60       .1  1.0  1.9  1.9  1.0   .2   .0   .0   .0   .0   .0   .0   .0                              6.1       5.94    .17   12.35       2.46
 60- 90       .3  1.4  199  2.0  1.2   .2   .0   .0   .0   .0   .0   .0   .0                              7.0       5.81    .30   12.35       2.51
 90-120       .3  3.0  3.9  4.1  1.6   .1   .0   .0   .0   .0   .0   .0   .0                             12.9       5.54    .48   11.32       2.24
120-150       .3  3.7  6.7 11.4 10.3  3.9   .6   .1   .0   .0   .0   .0   .0                             37.1       7.27    .24   17.49       2.60
150-180       .3  2.0  2.8  4.4  4.4  1.6   .6   .1   .0   .0   .0   .0   .0                             16.3       7.24    .69   15.43       2.09
180-210       .1   .6   .7   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                              2.0       4.87    .69   14.40       2.44
210-240       .2   .5   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                              1.4       4.17    .36   11.31       2.57
240-270       .1   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               .6       3.13    .69    6.17       1.45
270-300       .2   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                               .9       3.32    .51    8.79       2.12
300-330       .1   .8   .4   .3   .2   .2   .1   .0   .0   .0   .0   .0   .0                              2.1       5.70    .69   15.42       3.47
330-360       .1   .8  1.1  1.2   .5   .1   .0   .0   .0   .0   .0   .0   .0                              3.9       5.88    .51   15.42       2.75
CALM          .0                                                                                            .0

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      3.1 16.2 22.8 28.7 20.8  6.7  1.4   .3   .0   .0   .0   .0   .0                            100.00
MEAN DIR     154  144  127  129  135  146  164  185  150    0    0    0    0
STD DEV       93   83   74   63   49   46   39   59   75    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   6.45 M/S              MAXIMUM =  17.49 M/S            MINIMUM =   .00 M/S             RANGE =  17.49 M/S
           STANDARD DEVIATION =  2.65 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -3.24 M/S           STANDARD DEVIATION =   2.87 M/S
MEAN Y COMPONENT =   2.44 M/S           STANDARD DEVIATION =   4.08 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: CORPUS              SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                              PERCENT     MEAN     MIN    MAX      STD. DEV.
DEGREES                                                                                                                 SPEED    SPEED  SPEED

  0- 30       .5  4.4  6.6  6.0  2.6   .9   .1   .0   .0   .0   .0   .0   .0                                 21.2      5.81     .34  16.46       2.51
 30- 60       .3  2.3  3.2  2.0   .7   .1   .0   .0   .0   .0   .0   .0   .0                                  8.6      5.16     .69  12.35       2.29
 60- 90       .4  2.2  1.9  1.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                                  5.7      4.38     .30   9.77       2.09
 90-120       .4  3.3  1.7   .7   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  6.3      3.95     .51   9.77       1.91
120-150       .6  5.2  5.6  5.0  2.5   .9   .2   .0   .0   .0   .0   .0   .0                                 20.0      5.65     .17  14.40       2.63
150-180       .3  2.9  4.2  3.5  2.3  1.1   .3   .0   .0   .0   .0   .0   .0                                 14.7      6.19     .37  17.48       2.85
180-210       .2   .9   .8   .6   .3   .0   .0   .0   .0   .0   .0   .0   .0                                  2.9       496     .64  11.82       2.57
210-240       .3  1.0   .4   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  1.9      3.47     .24   9.25       2.05
240-270       .2   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                   .8      2.72     .63   7.72       1.34
270-300       .3   .9   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                  1.7      3.12     .48   8.74       1.85
300-330       .3  1.5  1.0  1.0   .4   .2   .0   .0   .0   .0   .0   .0   .0                                  4.4      5.00     .34  15.93       2.76
330-360       .5  2.8  2.9  2.7  1.3   .2   .0   .0   .0   .0   .0   .0   .0                                 10.4      5.44     .42  12.34       2.41
CALM         1.4                                                                                              1.4

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      5.6 28.1 28.7 22.9 10.6  3.4   .7   .1   .0   .0   .0   .0   .0                                100.00
MEAN DIR     173  148  129  133  142  138  131  142   90    0    0    0    0
STD DEV      107  102  102  107  103   91   63   99  106    0    0    0    0

                                           SUMMARY STATISTICS

MEAN SPEED =   5.28 M/S              MAXIMUM =  17.48 M/S            MINIMUM =   .00 M/S             RANGE =  17.48 M/S
            STANDARD DEVIATION =  2.49 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.56 M/S            STANDARD DEVIATION =   2.58 M/S
MEAN Y COMPONENT =   -.21 M/S            STANDARD DEVIATION =   5.00 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BROWNSV            SPANNING  4/ 1  TO  4/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                             PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                              SPEED   SPEED  SPEED

  0- 30     .4  1.5  1.6  1.8   .8   .1   .0   .0   .0   .0   .0   .0   .0                                    6.2    5.33     .51  12.35      2.62
 30- 60     .4  2.2  2.2  2.2   .3   .0   .0   .0   .0   .0   .0   .0   .0                                    7.2    4.82     .55  10.29      2.33
 60- 90     .4  2.6  1.9  1.3   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    6.4    4.29     .53   9.77      2.09
 90-120     .4  3.5  3.3  2.7   .4   .0   .0   .0   .0   .0   .0   .0   .0                                   10.5    4.79     .51  14.40      2.17
120-150     .5  4.0  8.1 10.8  6.4  1.7   .3   .0   .0   .0   .0   .0   .0                                   31.8     .50     .69  15.43      2.54
150-180     .3  1.9  3.8  7.3  6.1  3.3  1.4   .4   .0   .0   .0   .0   .0                                   24.5    7.75     .18  17.49      2.90
180-210     .1   .4   .4   .4   .2   .2   .0   .0   .0   .0   .0   .0   .0                                    1.8    5.87     .51  14.19      3.24
210-240     .1   .5   .1   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                    1.0    3.68     .51  10.29      2.41
240-270     .1   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     .3    2.60     .24   7.20      1.84
270-300     .1   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                     .6    2.87     .53   8.23      2.06
300-330     .4   .9   .6   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    2.5    4.28     .51  13.89      2.75
330-360     .4  1.6  1.1   .8   .3   .1   .0   .0   .0   .0   .0   .0   .0                                    4.4    4.67     .51  13.37      2.69
CALM       3.0                                                                                                3.0

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    6.7 19.5 23.2 28.1 14.8  5.4  1.8   .4   .0   .0   .0   .0   .0                                  100.00
MEAN DIR   160  149  134  137  149  162  170  168  180    0    0    0    0
STD DEV    107   88   68   56   38   12   11   37    0    0    0    0    0

                                          SUMMARY STATISTICS

MEAN SPEED =   5.89 M/S            MAXIMUM =  17.49 M/S           MINIMUM =   .00 M/S            RANGE =  17.49 M/S
           STANDARD DEVIATION =  2.84 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.61 M/S           STANDARD DEVIATION =   2.40 M/S
MEAN Y COMPONENT =   2.89 M/S           STANDARD DEVIATION =   4.68 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BROWNSV             SPANNING 11/ 1  TO 11/30 YEARS: 1970 - 1986     12240 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                         PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                           SPEED   SPEED  SPEED

  0- 30       .9  3.9  3.2  2.2   .4   .1   .0   .0   .0   .0   .0   .0   .0                            10.6      4.43    .51   15.43      2.39
 30- 60       .6  2.3  1.7   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0                             5.3      3.79    .51    9.77      2.04
 60- 90       .6  2.0   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                             3.6      3.16    .30    7.72      1.75
 90-120       .6  3.5  1.3   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                             5.8      3.31    .51    8.22      1.85
120-150       .9  5.9  4.7  3.1  1.1   .2   .0   .0   .0   .0   .0   .0   .0                            15.9      4.63    .51   13.09      2.39
150-180       .5  4.8  4.5  4.8  3.8  1.5   .4   .1   .0   .0   .0   .0   .0                            20.3      6.20    .51   17.48      2.99
180-210       .3   .9   .7   .5   .4   .1   .0   .0   .0   .0   .0   .0   .0                             3.1      5.01    .51   12.86      3.11
210-240       .2   .5   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.2      3.44    .51    9.26      2.14
240-270       .2   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                              .7      2.67    .51    8.74      1.66
270-300       .3   .9   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.3      2.58    .51    8.23      1.62
300-330       .6  4.4  2.5  1.6   .5   .1   .0   .0   .0   .0   .0   .0   .0                             9.7      4.29    .51   12.35      2.38
330-360       .8  5.8  4.7  4.1  1.9   .3   .0   .0   .0   .0   .0   .0   .0                            17.6      5.04    .40   12.35      2.60
CALM         4.7                                                                                         4.7

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     11.2 35.5 24.7 17.6  8.2  2.2   .5   .1   .0   .0   .0   .0   .0                            99.98
MEAN DIR     164  179  178  192  207  191  189  152  170    0    0    0    0
STD DEV      110  112  113  111   91   68   13   31   50    0    0    0    0

                                                     SUMMARY STATISTICS

MEAN SPEED =   4.53 M/S              MAXIMUM =  17.48 M/S            MINIMUM =   .00 M/S             RANGE =  17.48 M/S
           STANDARD DEVIATION =  2.58 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.53 M/S            STANDARD DEVIATION =   2.35 M/S
MEAN Y COMPONENT =    .32 M/S           STANDARD DEVIATION =   4.61 M/S
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D.3.2 NATIONAL DATA BUOY CENTER (NDBC) BUOYS AND PLATFORMS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42001              SPANNING  4/ 1  TO  4/30 YEARS: 1978 - 1986      5894 DATA POINTS -  91.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                            PERCENT    MEAN    MIN     MAX      STD. DEV.
DEGREES                                                                                                              SPEED   SPEED   SPEED

  0- 30      .5  1.0  1.5  1.4  1.1  1.0   .3   .0   .0   .0   .0   .0   .0                                  6.9     6.82    .13   15.81       3.26
 30- 60      .4  1.2  1.6  2.0  1.0   .8   .2   .1   .0   .0   .0   .0   .0                                  7.3     6.55    .39   15.42       3.04
 60- 90      .5  2.2  4.1  3.5  1.3   .8   .0   .0   .0   .0   .0   .0   .0                                 12.5     5.90    .13   12.97       2.48
 90-120      .6  3.0  5.2  4.8  1.7   .5   .2   .0   .0   .0   .0   .0   .0                                 15.9     5.75    .03   13.69       2.36
120-150      .6  3.0  4.8  4.8  4.4  3.2   .7   .4   .0   .0   .0   .0   .0                                 22.0     7.18    .13   15.84       3.03
150-180      .6  1.5  2.8  3.9  3.2  1.7   .8   .1   .0   .0   .0   .0   .0                                 14.6     7.16    .19   14.54       3.10
180-210      .6  1.2  1.3   .8   .7   .1   .1   .0   .0   .0   .0   .0   .0                                  4.7     5.08    .14   13.78       2.86
210-240      .4   .6   .6   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                  1.9     4.11    .15    9.26       2.28
240-270      .1   .3   .2   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                   .9     4.75    .07   12.39       2.60
270-300      .4   .4   .3   .2   .3   .4   .2   .0   .0   .0   .0   .0   .0                                  2.2     6.49    .06   13.64       4.00
300-330      .4   .8  1.0   .7   .8   .9   .6   .0   .0   .0   .0   .0   .0                                  5.2     7.22    .21   14.45       3.63
330-360      .3   .8  1.3  1.6   .9   .6   .2   .0   .0   .0   .0   .0   .0                                  5.7     6.63    .07   13.55       2.87
CALM         .2                                                                                                .2

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     5.5 16.2 24.7 24.2 15.6 10.1  3.3   .5   .0   .0   .0   .0   .0                               100.00
MEAN DIR    164  144  135  135  146  150  175  124    0    0    0    0    0
STD DEV      96   85   82   82   83   93  100   51    0    0    0    0    0


                                        SUMMARY STATISTICS

MEAN SPEED =   6.48 M/S            MAXIMUM =  15.84 M/S           MINIMUM =   .00 M/S            RANGE =  15.84 M/S
            STANDARD DEVIATION =  2.96 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.81 M/S           STANDARD DEVIATION =   3.90 M/S
MEAN Y COMPONENT =   1.02 M/S           STANDARD DEVIATION =   5.15 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42001              SPANNING 11/ 1  TO 11/30 YEARS: 1977 - 1986      6480 DATA POINTS -  90.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                   PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                     SPEED   SPEED  SPEED

  0- 30      .2  1.0  1.8  2.5  2.1  1.5  1.0   .1   .0   .0   .0   .0   .0                        10.3     7.86    .10  16.12     3.15
 30- 60      .2  2.1  3.6  3.3  2.5  1.3   .5   .2   .1   .1   .0   .0   .0                        13.8     7.00    .03  19.66     3.07
 60- 90      .8  3.0  3.6  4.2  1.9   .4   .1   .0   .1   .0   .0   .0   .0                        14.1     5.86    .19  17.60     2.66
 90-120      .6  2.8  5.4  5.1  1.5   .2   .0   .0   .0   .0   .0   .0   .0                        15.7     5.64    .13  14.70     2.09
120-150      .3  1.6  3.4  4.8  3.2   .9   .3   .1   .0   .0   .0   .0   .0                        14.6     6.89    .06  15.79     2.47
150-180      .5  1.3  2.3  3.3  1.4   .8   .1   .0   .0   .0   .0   .0   .0                         9.6     6.43    .19  13.12     2.55
180-210      .5  1.0  1.4   .7   .4   .1   .0   .0   .0   .0   .0   .0   .0                         4.1     4.93    .28  13.66     2.47
210-240      .5  1.0   .9   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                         2.8     3.98    .14  16.26     2.28
240-270      .5   .5   .6   .3   .3   .1   .0   .0   .0   .0   .0   .0   .0                         2.3     4.75    .26  11.98     2.86
270-300      .3   .3   .6   .6   .4   .1   .0   .0   .0   .0   .0   .0   .0                         2.3     5.99    .06  12.33     2.80
300-330      .3   .4   .5   .6   .7   .9   .3   .0   .0   .0   .0   .0   .0                         3.8     7.74    .10  14.35     3.56
330-360      .3   .5   .8   .8  1.3  1.7   .7   .3   .0   .0   .0   .0   .0                         6.3     8.71    .19  15.65     3.60
CALM         .4                                                                                      .4

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     5.3 15.5 24.7 26.5 15.8  8.0  3.1   .8   .3   .1   .0   .0   .0                       100.00
MEAN DIR    172  128  124  118  131  167  148  186   70   54    0    0    0
STD DEV      92   84   80   76   98  131  139  144   39   34    0    0    0

                                           SUMMARY STATISTICS

MEAN SPEED =   6.51 M/S             MAXIMUM =  19.66 M/S           MINIMUM =   .00 M/S            RANGE =  19.66 M/S
          STANDARD DEVIATION =  2.97 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.74 M/S           STANDARD DEVIATION =   3.95 M/S
MEAN Y COMPONENT =   -.61 M/S           STANDARD DEVIATION =   5.26 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA         STATION: 42002              SPANNING  4/ 1  TO  4/30 YEARS: 1977 - 1986     7140 DATA POINTS -  99.2 PERCENT OF TOTAL

DIRECTION FROM                                                                                         PERCENT    MEN    MIN    MAX      STD. DEV.
DEGREES                                                                                                           SPEED  SPEED  SPEED

  0- 30      .1   .7  1.3  1.4   .8   .6   .3   .1   .0   .0   .0   .0   .0                             5.4     7.11    .58  15.60       3.10
 30- 60      .4  1.1  1.7  1.5  1.7   .9   .3   .1   .0   .0   .0   .0   .0                             7.6     6.98    .57  16.96       3.27
 60- 90      .3  1.8  3.9  3.2  2.1   .8   .1   .0   .0   .0   .0   .0   .0                            12.3     6.30    .69  13.11       2.51
 90-120      .5  2.2  5.3  8.6  4.7   .9   .1   .0   .0   .0   .0   .0   .0                            22.3     6.59    .27  14.20       2.27
120-150      .4  2.1  5.8  9.6  7.8  3.2   .6   .0   .0   .0   .0   .0   .0                            29.5     7.30    .19  14.23       2.47
150-180      .3  1.1  1.8  2.0  1.5  1.0   .2   .0   .0   .0   .0   .0   .0                             8.0     6.75    .72  12.97       2.86
180-210      .4   .6   .9   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                             2.5     4.65    .36  12.53       2.19
210-240      .2   .4   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.1     3.79    .19   7.42       1.85
240-270      .4   .3   .4   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.3     3.62    .42   7.16       2.18
270-300      .6   .5   .4   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                             1.8     3.68    .07  14.66       2.71
300-330      .3   .4   .9   .9   .4   .1   .1   .3   .0   .0   .0   .0   .0                             3.3     6.96    .24  16.53       3.68
330-360      .3   .5   .8  1.1  1.1   .5   .2   .0   .0   .0   .0   .0   .0                             4.5     7.17    .68  14.86       3.00
CALM         .4                                                                                          .4

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
 M/S         !    !    !    !    !    !    !    !    !    !    !    !    !
             2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     4.6 11.7 23.5 29.3 20.3  8.1  1.9   .6   .1   .0   .0   .0   .0                          100.00
MEAN DIR    105  137  129  128  128  125  133  205  108    0    0    0    0
STD DEV      97   84   76   70   70   77  106  136  140    0    0    0    0

                                                    SUMMARY STATISTICS

MEAN SPEED =   6.67 M/S              MAXIMUM =  16.96 M/S           MINIMUM =   .00 M/S             RANGE =  16.96 M/S
            STANDARD DEVIATION =  2.71 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -3.93 M/S            STANDARD DEVIATION =   3.64 M/S
MEAN Y COMPONENT =   1.14 M/S            STANDARD DEVIATION =   4.68 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42002             SPANNING 11/ 1  TO 11/30 YEARS: 1977 - 1986     7107 DATA POINTS -  98.7 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

   0- 30      .4  1.1  1.4  2.4  2.3  1.6   .9   .4   .1   .0   .0   .0   .0                          10.6       8.02    .06  17.97      3.41
  30- 60      .3  1.6  2.4  2.7  2.5  2.2   .7   .2   .0   .0   .0   .0   .0                          12.6       7.53    .23  17.50      3.11
  60- 90      .5  1.5  3.3  3.8  2.3   .6   .1   .0   .0   .0   .0   .0   .0                          12.0       6.36    .21  21.21      2.50
  90-120      .3  1.6  2.9  2.7  1.0   .3   .1   .0   .0   .0   .0   .0   .0                           8.9       5.93    .07  17.20      2.37
 120-150      .4  1.4  3.7  5.7  5.2  1.7   .4   .0   .0   .0   .0   .0   .0                          18.5       7.22    .28  16.15      2.48
 150-180      .3  1.2  2.7  3.3  3.8  2.5   .5   .0   .0   .0   .0   .0   .0                          14.3       7.59    .54  14.20      2.81
 180-210      .4  1.2  2.1  1.8   .7   .4   .3   .0   .0   .0   .0   .0   .0                           6.9       6.08    .04  14.69      2.88
 210-240      .3   .6   .5   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                           2.0       4.49    .43  16.26      2.70
 240-270      .2   .5   .3   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                           1.3       4.27    .34  11.12      2.39
 270-300      .2   .4   .3   .5   .3   .2   .0   .0   .0   .0   .0   .0   .0                           1.9       6.14    .53  12.56      3.03
 300-330      .2   .4   .5   .8  1.5   .8   .3   .1   .0   .0   .0   .0   .0                           4.5       8.25    .38  15.93      3.02
 330-360      .2   .7   .9   .8  1.4  1.3   .7   .2   .0   .0   .0   .0   .0                           6.1       8.44    .30  18.51      3.61
 CALM         .4                                                                                        .4

  SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
  M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

 PERCENT     4.1 12.1 21.1 24.9 21.2 11.6  3.9  1.0   .2   .0   .0   .0   .0                         100.00
 MEAN DIR    152  140  132  127  141  145  147  138  114  342   74    0    0
 STD DEV      95   92   79   80   94  108  125  143  133    0   17    0    0

                                                   SUMMARY STATISTICS

 MEAN SPEED =   7.08 M/S              MAXIMUM =  21.21 M/             MINIMUM =   .00 M/S              RANGE =  21.21 M/S
            STANDARD DEVIATION =  2.99 M/S

 IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
 MEAN X COMPONENT =  -2.66 M/S          STANDARD DEVIATION =   3.93 M/S
 MEAN Y COMPONENT =    .11 M/S          STANDARD DEVIATION =   6.04 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA         STATION: 42003           SPANNING  4/ 1  TO  4/30 YEARS: 1978 - 1986      6480 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30      .5  1.2  1.3  1.0   .7   .3   .0   .    .0   .0   .0   .0   .0                             5.1      5.53    .21   12.49     2.97
 30- 60      .4  1.9  3.2  2.2  1.0   .4   .3   .0   .0   .0   .0   .0   .0                             9.4      5.78    .09   13.89     2.76
 60- 90      .6  3.3  5.6  5.4  2.1   .3   .2   .1   .1   .0   .0   .0   .0                            17.7      5.87    .17   17.78     2.57
 90-120      .6  2.3  5.8  6.5  3.3  1.1   .1   .0   .1   .0   .0   .0   .0                            19.8      6.40    .13   17.92     2.41
120-150      .4   .9  3.2  4.9  4.9  1.4   .3   .0   .0   .0   .0   .0   .0                            15.9      7.27    .46   14.45     2.47
150-180      .4   .9  1.5  2.2  1.9  1.0   .4   .0   .1   .0   .0   .0   .0                             8.3      7.20    .27   17.29     3.20
180-210      .4   .5  1.0  1.2   .6   .3   .2   .1   .0   .0   .0   .0   .0                             4.2      6.42    .21   14.79     3.29
210-240      .3   .7   .4   .5   .2   .1   .1   .0   .0   .0   .0   .0   .0                             2.3      5.49    .09   14.11     3.22
240-270      .3   .7   .4   .3   .3   .1   .0   .0   .0   .0   .0   .0   .0                             2.1      4.93    .40   12.09     2.90
270-300      .2   .8   .6   .4   .4   .4   .2   .1   .0   .0   .0   .0   .0                             3.1      6.54    .20   17.33     3.84
300-330      .7  1.0  1.0  1.0  1.5   .5   .2   .1   .0   .0   .0   .0   .0                             5.9      6.45    .15   15.35     3.42
330-360      .6   .7  1.7  1.4  1.0   .4   .0   .0   .0   .0   .0   .0   .0                             5.9      6.04    .21   13.65     2.88
CALM         .3                                                                                          .3

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     5.7  146 25.7 27.0 17.8  6.4  2.0   .4   .3   .0   .0   .0   .0                         100.00
MEAN DIR    174  140  130  133  150  163  161  219  125    0    0    0    0
STD DEV     110   98   89   81   87   91   94   84   43    0    0    0    0
                                                  SUMMARY STATISTICS

MEAN SPEED =   6.33 M/S            MAXIMUM =  17.92 M/S           MINIMUM =   .00 M/S            RANGE =  17.92 M/S
           STANDARD DEVIATION =  2.79 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -2.85 M/S          STANDARD DEVIATION =   4.37 M/S
MEAN Y COMPONENT =    .55 M/S          STANDARD DEVIATION =   4.50 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: 42003             SPANNING 11/ 1  TO 11/30 YEARS: 1977 - 1986      5760 DATA POINTS -  80.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                     PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                       SPEED   SPEED  SPEED

  0- 30      .5  1.6  2.4  2.7  1.9   .8   .5   .5   .0   .0   .0   .0   .0                         10.8     6.91    .16   16.15      3.40
 30- 60      .5  1.6  3.1  4.7  4.0  1.1   .3   .0   .2   .1   .0   .1   .1                         15.7     7.25    .23   35.93      3.19
 60- 90      .6  2.0  4.4  6.3  3.3   .6   .1   .2   .5   .2   .0   .0   .0                         18.3     6.91    .30   47.30      3.24
 90-120      .5  1.3  4.4  6.9  2.6   .5   .3   .2   .0   .0   .0   .0   .0                         16.7     6.63    .07   16.49      2.35
120-150      .2  1.4  2.7  3.4  1.4   .6   .1   .0   .0   .0   .0   .0   .0                          9.9     6.33    .10   16.59      2.40
150-180      .5  1.2  1.6  1.5  1.0   .2   .0   .0   .0   .0   .0   .0   .0                          6.0     5.75    .24   14.24      2.53
180-210      .4   .4   .5   .4   .1   .0   .0   .0   .0   .0   .0   .0   .1                          1.9     5.40    .13   36.49      4.32
210-240      .5   .5   .5   .5   .3   .2   .0   .0   .0   .0   .1   .0   .0                          2.5     6.10    .17   22.25      4.70
240-270      .3   .6   .7   .5   .4   .1   .2   .1   .1   .0   .0   .0   .0                          3.0     6.51    .24   22.70      4.30
270-300      .3   .5   .5   .6   .5   .1   .0   .0   .0   .0   .0   .0   .0                          2.5     5.51    .07   12.97      3.10
300-330      .5   .5   .8   .7   .7   .4   .1   .0   .0   .0   .0   .0   .0                          3.6     6.27    .42   16.50      3.40
330-360      .2  1.1  1.8  2.0  1.8  1.2   .6   .2   .0   .0   .0   .0   .0                          8.8     7.42    .24   15.07      3.35
CALM         .3                                                                                       .3

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   47

PERCENT     5.3 12.8 23.3 30.1 18.0  5.7  2.2  1.3   .8   .3   .1   .1   .1                        100.00
MEAN DIR    162  139  127  110  125  156  163  123   94   74  191  146  107
STD DEV     101  103   95   89  103  126  135  124   60   44   80  113   72

                                              SUMMARY STATISTICS

MEAN SPEED =   6.70 M/S               MAXIMUM =  47.30 M/S          MINIMUM =   .00 M/S            RANGE =  47.30 M/S
          STANDARD DEVIATION =  3.23 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED      .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -3.00 M/S            STANDARD DEVIATION =   4.60 M/S
MEAN Y COMPONENT =  -1.39 M/S            STANDARD DEVIATION =   4.76 M/S
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D.3.3 NATIONAL DATA BUOY CENTER (NDBC) CMAN STATIONS

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: ALRF1              SPANNING  4/ 1  TO  4/30 YEARS: 1986 - 1987      1440 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN    MIN    MAX       STD. DEV.
DEGREES                                                                                                             SPEED   SPEED  SPEED

  0- 30       .4  2.1  1.7  1.7   .4   .1   .1   .0   .0   .0   .0   .0   .0                               6.5      4.87    .52   12.89        2.65
 30- 60       .7  1.8  2.2  2.8  2.3   .3   .0   .0   .0   .0   .0   .0   .0                              10.0      5.84   1.03   10.82        2.93
 60- 90       .6  3.3  4.3  2.8  3.0   .6   .0   .0   .0   .0   .0   .0   .0                              14.5      5.66    .52   10.82        2.86
 90-120      1.0  1.2  2.5  2.3  1.2   .1   .0   .0   .0   .0   .0   .0   .0                               8.3      5.42    .52   10.31        2.57
120-150       .3  1.0   .6   .6   .1   .2   .1   .0   .0   .0   .0   .0   .0                               2.8      4.97    .52   12.37        3.31
150-180       .1   .4   .3   .2   .6   .1   .0   .0   .0   .0   .0   .0   .0                               1.7      5.92   1.03   11.34        3.04
180-210       .3   .4   .1   .1   .2   .0   .0   .0   .0   .0   .0   .0   .0                               1.2      4.09    .52    9.28        3.20
210-240      1.0  1.7  1.7   .9   .5   .1   .1   .0   .0   .0   .0   .0   .0                               6.0      4.47    .52   12.37        2.75
240-270       .7  1.0  1.6  1.2   .6   .1   .0   .0   .0   .0   .0   .0   .0                               5.2      4.93    .52   10.31        2.79
270-300       .8  2.8  4.7  4.0  1.7   .3   .0   .0   .0   .0   .0   .0   .0                              14.2      5.48    .52   11.34        2.40
300-330       .4  2.4  2.6  2.0  1.2   .1   .0   .0   .0   .0   .0   .0   .0                               8.7      5.28    .52   10.82        2.34
330-360      1.2  2.8  2.9  3.1  1.7   .7   .1   .0   .0   .0   .0   .0   .0                              12.4      5.44    .52   12.37        3.01
CALM         8.5                                                                                            8.5

 SPEED         0    2    4    6    8   10   12   14   16   18   20   22   24
               !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S           2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     15.9 21.1 25.2 21.6 13.4  2.5   .3   .0   .0   .0   .0   .0   .0                             100.00
MEAN DIR     196  189  191  189  173  193  185    0    0    0    0    0    0
STD DEV      109  118  115  121  115  124  131    0    0    0    0    0    0


                                                    SUMMARY STATISTICS

MEAN SPEED =   4.90 M/S              MAXIMUM =  12.89 M/S          MINIMUM =   .00 M/S             RANGE =  12.89 M/S
           STANDARD DEVIATION =  2.85 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.09 M/S           STANDARD DEVIATION =   4.50 M/S
MEAN Y COMPONENT =  -1.22 M/S           STANDARD DEVIATION =   3.22 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: ALRF1              SPANNING 11/ 1  TO 11/30 YEAR: 1986 - 1987      1440 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN     MIN    MAX      STD. DEV.
DEGREES                                                                                                            SPEED    SPEED  SPEED

  0- 30      .2   .9  1.5  2.3  1.7   .4   .0   .1   .0   .0   .0   .0   .0                               7.2      6.60     1.03   14.43      2.75
 30- 60      .2   .8  2.3  3.0  2.5  2.9  2.0   .6   .0   .0   .0   .0   .0                              14.3      8.74     1.03   15.46      3.28
 60- 90      .2  1.2  5.0  8.7  9.6  8.0  3.1   .8   .0   .0   .0   .0   .0                              36.5      8.66     1.03   15.98      2.64
 90-120      .5   .9  3.2  4.5  5.0  3.5   .8   .3   .0   .0   .0   .0   .0                              18.7      7.88      .52   15.46      3.06
120-150      .3   .8  2.3   .5   .3   .1   .0   .0   .0   .0   .0   .0   .0                               4.2      4.80     1.03   11.34      2.31
150-180      .3   .6  1.0   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0                               2.8      4.77      .52    8.76      2.51
180-210      .1   .2   .8   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                               1.4      4.82      .52    7.73      2.10
210-240      .3   .6  1.0  1.0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               2.9      4.91     1.55    7.73      2.06
240-270      .3   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               1.3      2.58      .52    5.15      1.84
270-300      .0   .6   .9   .9   .5   .1   .0   .0   .0   .0   .0   .0   .0                               3.1      5.94     2.06   10.82      2.64
300-330      .1   .5  1.2   .6   .2   .1   .0   .0   .0   .0   .0   .0   .0                               2.6      5.34     1.03   11.34      2.23
330-360      .1   .5  1.0   .3   .8   .4   .4   .0   .0   .0   .0   .0   .0                               3.5      7.18     1.55   13.92      3.74
CALM        1.5                                                                                             1.5

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     4.0  8.4 20.6 22.8 20.8 15.6  6.2  1.7   .0   .0   .0   .0   .0                             100.00
MEAN DIR    150  159  137  105   96   88   91   70    0    0    0    0    0
STD DEV      79  100   91   70   64   50   66    5    0    0    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   7.51 M/S            MAXIMUM =  15.98 M/S            MINIMUM =   .00 M/S            RANGE =  15.98 M/S
            STANDARD DEVIATION =  3.26 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -5.26 M/S          STANDARD DEVIATION =   4.94 M/S
MEAN Y COMPONENT =  -1.27 M/S          STANDARD DEVIATION =   3.67 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: VENF1              SPANNING  4/ 1  TO  4/30 YEARS: 1987 - 1987      562 DATA POINTS -  78.1 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                            SPEED   SPEED  SPEED

  0- 30     2.5  2.7   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.5      2.11     .52   4.64       1.42
 30- 60     1.6  1.8   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               3.7      2.23    1.03   4.64       1.49
 60- 90     1.2  4.4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.7      2.42    1.03   3.61       1.21
 90-120     2.0   .5   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               3.0      1.88     .52   5.67       1.82
120-150     1.8   .4   .4   .0   .2   .2   .0   .0   .0   .0   .0   .0   .0                               2.8      2.67     .52  10.82       3.32
150-180      .7  1.8  2.3   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.2      3.93     .52   6.70       1.58
180-210      .4   .5   .7   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               1.6      3.32    1.55   4.64       1.93
210-240      .9  1.8   .0  2.1   .2   .0   .0   .0   .0   .0   .0   .0   .0                               5.0      4.62    1.03   8.25       2.48
240-270      .2  1.8  3.9  1.4   .4   .0   .0   .0   .0   .0   .0   .0   .0                               7.7      4.83    1.55   8.25       2.14
270-300      .5  7.3 13.2  5.5   .9   .0   .0   .0   .0   .0   .0   .0   .0                              27.4      4.77     .52   8.76       2.04
300-330      .4  2.7  6.6  6.9  6.0   .9   .0   .0   .0   .0   .0   .0   .0                              23.5      6.46    1.03  10.82       2.51
330-360     1.8  1.4   .9  1.1   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.2      3.31     .52   7.73       2.56
CALM        3.7                                                                                           3.7

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    17.6 27.0 29.2 17.4  7.7  1.1   .0   .0   .0   .0   .0   .0   .0                            100.00
MEAN DIR    144  192  263  286  301  290    0    0    0    0    0    0    0
STD DEV     107  114   76   54   45   44    0    0    0    0    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   4.32 M/S             MAXIMUM =  10.82 M/S           MINIMUM =   .00 M/S             RANGE =  10.82 M/S
           STANDARD DEVIATION =  2.44 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   2.66 M/S            STANDARD DEVIATION =   3.07 M/S
MEAN Y COMPONENT =  -1.01 M/S            STANDARD DEVIATION =   2.67 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: VENF1              SPANNING 11/ 1  TO 11/30 YEARS: 1987 - 1987       720 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                             SPEED   SPEED  SPEED

  0- 30     1.5  6.0  8.1  2.5   .0   .0   .0   .0   .0   .0   .0   .0   .0                                10.1      4.26     .52   7.73      1.70
 30- 60      .7 14.7  7.9  4.2  1.4   .0   .0   .0   .0   .0   .0   .0   .0                                20.9      4.28    1.03   9.79      2.02
 60- 90      .7  8.3  8.6  3.5   .8   .0   .0   .0   .0   .0   .0   .0   .0                                21.9      4.40     .52   9.28      2.19
 90-120      .3  1.4  3.1  1.3   .1   .0   .0   .0   .0   .0   .0   .0   .0                                 6.1      4.61     .52   9.79      2.31
120-150      .6   .8   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 2.4      3.51    1.50   6.70      1.72
150-180      .4   .8   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 1.8      3.21    1.55   6.19      1.98
180-210      .7   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 1.3      1.98     .52   3.61       .84
210-240      .6  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 1.9      2.43    1.03   4.64      1.83
240-270      .6   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                                 1.1      2.00     .52   3.09      1.07
270-300      .6  1.3   .7   .2   .1   .0   .0   .0   .0   .0   .0   .0   .0                                 2.9      3.45     .26   8.25      2.64
300-330      .0   .6  2.4  1.8  1.3   .6   .7   .0   .0   .0   .0   .0   .0                                 7.2      7.17    2.06  13.40      3.08
330-360      .3   .7  1.1   .7  1.0  1.3   .3   .0   .0   .0   .0   .0   .0                                 5.3      7.34    1.55  12.37      3.45
CALM        1.1                                                                                              1.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     7.9 36.8 33.3 14.4  4.7  1.8  1.0   .0   .0   .0   .0   .0   .0                               100.00
MEAN DIR    140   86   93  111  191  327  321    0    0    0    0    0    0
STD DEV      99   76   91  104  138   81   43    0    0    0    0    0    0

                                                   SUMMARY STATISTICS

MEAN SPEED =   4.49 M/S              MAXIMUM =  13.40 M/S           MINIMUM =   .00 M/S              RANGE =  13.40 M/S
            STANDARD DEVIATION =  2.28 M/S

IN A COORDINATE SYSTEM WHOSE Y AXI  IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.75 M/S            STANDARD DEVIATION =   3.28 M/S
MEAN Y COMPONENT =  -2.14 M/S            STANDARD DEVIATION =   2.65 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: CSDF1            SPANNING  4/ 1  TO  4/30 YEARS: 1985 - 1987      2107 DATA POINTS -  97.5 PERCENT OF TOTAL

DIRECTION FROM                                                                                         PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                           SPEED   SPEED  SPEED

  0- 30     2.2  3.1   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.6      2.19     .52    4.64      1.39
 30- 60     2.4  1.9   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               4.5      1.94     .52    5.15      1.35
 60- 90     1.0  1.7  1.3   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                               4.3      3.26     .52    7.22      2.11
 90-120     1.0  4.2  2.8   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               8.0      3.29     .52    6.70      1.71
120-150     1.9  3.1   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.4      2.21     .52    5.67      1.58
150-180      .8  3.7  1.4   .8   .2   .0   .0   .0   .0   .0   .0   .0   .0                               6.9      3.67     .52    9.28      2.12
180-210      .5  2.4   .6   .1   .0   .1   .0   .0   .0   .0   .0   .0   .0                               3.7      3.30     .52   11.86      2.08
210-240     1.5  5.6  4.6  2.1   .6   .1   .0   .0   .0   .0   .0   .0   .0                              14.5      4.16     .52   10.82      2.37
240-270      .5  3.0  3.8  2.6   .8   .2   .0   .0   .0   .0   .0   .0   .0                              10.9      5.04     .52   11.34      2.33
270-300     1.2  4.1  5.6  3.8  1.0   .0   .0   .0   .0   .0   .0   .0   .0                              15.8      4.82     .52   10.31      2.34
300-330     1.9  2.3  1.5   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                               5.9      2.76     .52    8.25      2.07
330-360     3.2  3.9   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                               7.5      2.12     .52    4.64      1.39
CALM        7.1                                                                                          7.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    25.1 39.1 22.7 10.0  2.7   .4   .0   .0   .0   .0   .0   .0   .0                             100.00
MEAN DIR    184  193  219  246  250  237    0    0    0    0    0    0    0
STD DEV     121   98   88   53   51   43    0    0    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   3.34 M/S           MAXIMUM =  11.86 M/S           MINIMUM =   .00 M/S            RANGE =  11.86 M/S
           STANDARD DEVIATION =  2.17 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   1.34 M/S           STANDARD DEVIATION =   3.09 M/S
MEAN Y COMPONENT =    .54 M/S           STANDARD DEVIATION =   2.07 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA           STATION: CSDF1              SPANNING 11/ 1  TO 11/30 YEARS: 1985 - 1987     1955 DATA POINTS -  96.5 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                            SPEED   SPEED  SPEED

  0- 30     4.7  6.4  2.1   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                             13.2      2.49    .52    6.76      1.62
 30- 60     6.8  9.1  3.1   .3   .0   .0   .0   .0   .0   .0   .0   .0   .0                             19.2      2.50    .43    7.73      1.78
 60- 90     5.1 13.5  2.1   .3   .3   .1   .1   .0   .0   .0   .0   .0   .0                             21.3      2.74    .52   12.37      1.81
 90-120     2.5  7.3  1.0   .0   .0   .1   .0   .0   .1   .1   .0   .0   .0                             10.9      2.70    .52   18.04      2.26
120-150     2.5  3.4   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                              6.2      2.22    .52    7.22      1.48
150-180      .6  1.6  1.1   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                              3.8      3.81    .52    9.15      2.09
180-210      .3   .9   .5   .2   .0   .0   .1   .0   .0   .0   .0   .0   .0                              1.9      3.54    .52   12.30      2.64
210-240      .4  1.9  1.5   .1   .1   .0   .0   .0   .0   .1   .0   .0   .0                              3.9      3.78    .52   18.56      2.57
240-270      .0   .4   .6   .2   .0   .0   .0   .0   .0   .0   .0   .1   .0                              1.2      5.13   2.06   23.71      4.44
270-300      .2   .5   .7   .7   .3   .0   .0   .0   .0   .0   .0   .0   .0                              2.3      5.31   1.55    9.28      2.27
300-330      .5  1.0  1.5   .1   .0   .1   .0   .0   .0   .0   .0   .0   .0                              3.2      3.64    .52   10.82      2.17
330-360     1.2  2.7  1.2   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                              5.2      2.77    .52    5.15      1.86
CALM        7.6                                                                                          7.6

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    32.1 48.6 15.8  2.4   .6   .2   .1   .0   .1   .1   .0   .1   .0                            100.00
MEAN DIR     94  108  150  180  183  167  146    0  190  160    0  250    0
STD DEV      79   82  112   96   99  128   34    0    0  102    0    0    0

                                               SUMMARY STATISTICS

MEAN SPEED =   2.63 M/S              MAXIMUM =  23.71 M/S           MINIMUM =   .00 M/S             RANGE =  23.71 M/S
               STANDARD DEVIATION =  1.83 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.99 M/S          STANDARD DEVIATION =  2.28 M/S
MEAN Y COMPONENT =   -.41 M/S          STANDARD DEVIATION =  1.97 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: DURLI            SPANNING  4/ 1  TO  4/30 YEARS: 1985 - 1987     2160 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                          SPEED   SPEED  SPEED

  0- 30      .7  1.8  2.0  2.3  1.3   .6   .2   .0   .0   .0   .0   .0   .0                             8.8      5.82    .52   12.89      3.06
 30- 60      .8  1.9  3.3  1.1   .8   .6   .0   .0   .0   .0   .0   .0   .0                             8.5      5.08    .52   11.86      2.89
 60- 90     1.1  2.4  4.6  2.4   .9   .1   .0   .0   .0   .0   .0   .0   .0                            11.4      4.90    .52   10.82      2.38
 90-120      .7  2.5  4.0  4.5  1.5   .3   .1   .0   .0   .0   .0   .0   .0                            13.7      5.74    .52   16.49      2.55
120-150      .5  1.7  1.5  1.3   .5   .5   .4   .0   .0   .0   .0   .0   .0                             6.4      5.89    .35   16.49      3.46
150-180      .4  2.0  1.8  1.5   .6   .2   .0   .0   .0   .0   .0   .0   .0                             6.7      5.12    .52   12.89      2.66
180-210      .8  1.0  1.1   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0                             3.6      3.98    .52   10.31      2.73
210-240     1.0  2.1  4.7  4.5  2.3  1.2   .5   .1   .0   .0   .0   .0   .0                            16.5      6.27    .52   15.46      3.06
240-270      .4   .6   .8  1.2   .3   .3   .0   .0   .0   .0   .0   .0   .0                             3.8      5.00    .52   12.37      2.98
270-300      .5  1.1  1.3   .8   .8   .1   .0   .0   .0   .0   .0   .0   .0                             4.7      5.47    .52   13.92      2.74
300-330      .5   .9  1.0  1.1   .7   .3   .1   .0   .0   .0   .0   .0   .0                             4.6      5.90    .40   16.49      3.45
330-360      .7  1.9  2.6  1.5   .8   .4   .1   .0   .0   .0   .0   .0   .0                             8.0      5.32    .52   13.40      2.74
CALM        3.2                                                                                         3.2

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    11.3 19.9 20.8 22.8 10.9  4.5  1.5   .2   .1   .0   .0   .0   .0                           100.00
MEAN DIR    166  164  160  164  172  174  179  255  190    0    0    0    0
STD DEV     103   97   97   93  102  103   91   55  108    0    0    0    0

                                            SUMMARY STATISTICS

MEAN SPEED =   5.36 M/S            MAXIMUM =  16.49 M/S           MINIMUM =   .00 M/S            RANGE =  16.49 M/S
          STANDARD DEVIATION =  2.88 M/S

* A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.48 M/S          STANDARD DEVIATION =   4.47 M/S
MEAN Y COMPONENT =    .33 M/S          STANDARD DEVIATION =   4.09 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BURL1               SPANNING 11/ 1  TO 11/30 YEARS: 1985 - 1987     1926 DATA POINTS -  89.2 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN     MI     MAX      STD. DEV.
DEGREES                                                                                                             SPEED   SPEED  SPEED

  0- 30      .4  1.4  6.0  4.3  3.7  1.1   .2   .3   .0   .0   .0   .0   .0                               17.4     6.66    1.03   15.98      2.82
 30- 60      .3  1.8  2.0  1.8   .5   .1   .0   .1   .1   .0   .0   .0   .0                                6.6     5.27     .52   17.01      3.04
 60- 90      .6  2.8  4.8  2.3  2.0   .2   .0   .0   .0   .0   .0   .0   .0                               12.6     5.34     .52   11.86      2.56
 90-120      .2  1.7  5.1  6.7  2.5  1.3   .3   .1   .0   .0   .0   .0   .0                               17.8     6.63     .52   14.95      2.43
120-150      .2   .9  1.1   .9   .7   .2   .0   .0   .0   .0   .0   .0   .0                                4.0     5.80    1.03   11.86      2.79
150-180      .1   .2   .3   .6   .4   .1   .0   .0   .0   .0   .0   .0   .0                                1.7     6.33     .36   10.31      2.43
180-210      .0   .2   .8  1.1   .3   .0   .0   .0   .0   .0   .0   .0   .0                                2.3     6.40    3.09    9.28       .95
210-240      .2   .3  1.2  1.2   .2   .3   .2   .1   .0   .0   .0   .0   .0                                3.5     6.41    1.03   14.43      3.10
240-270      .1   .1   .8   .3   .1   .7   .3   .0   .0   .0   .0   .0   .0                                2.2     7.85     .52   13.92      3.41
270-300      .2   .4  1.3  1.0  1.0   .2   .0   .0   .0   .0   .0   .0   .0                                4.0     6.50     .52   11.34      2.17
300-330      .2   .7   .7  1.3  1.5  1.3   .5   .2   .2   .0   .0   .0   .0                                6.5     8.48     .99   17.01      3.52
330-360      .3   .9  2.5  3.8  3.6  2.8  2.2  1.1   .3   .1   .0   .0   .0                               17.5     8.89     .52   18.04      3.51
CALM        3.6                                                                                            3.6

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     6.2 11.3 26.6 25.3 16.4  8.3  3.5  1.8   .5   .1   .0   .0   .0                             100.00
MEAN DIR    151  127  128  153  168  226  293  256  299  330    0    0    0
STD DEV     113  101  106  112  130  130  103  140  105    0    0    0    0

                                          SUMMARY STATISTICS

MEAN SPEED =   6.3 M/S              MAXIMUM =  18.04 M/S            MINIMUM =   .00 M/S              RANGE =  18.04 M/S
           STANDARD DEVIATION =  3.27 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.96 M/S           STANDARD DEVIATION =   4.82 M/S
MEAN Y COMPONENT =  -2.27 M/S           STANDARD DEVIATION =   5.03 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: BDILI              SPANNING  4/ 1  TO  4/30 YEARS: 1985 - 1987      2143 DATA POINTS -  99.2 PERCENT OF TOTAL

DIRECTION FROM                                                                                           PERCENT    MEAN   MIN    MAX      STD. DEV.
DEGREES                                                                                                             SPEED  SPEED  SPEED

  0- 30      .6  1.2  1.4  1.7  1.0   .4   .3   .0   .0   .0   .0   .0   .0                                6.6     6.14    .52  13.92       3.15
 30- 60      .4   .8  1.2  2.4  1.0   .0   .0   .0   .0   .0   .0   .0   .0                                5.8     6.07    .52  12.37       2.46
 60- 90      .4  1.5  2.0  1.9   .7   .0   .0   .0   .0   .0   .0   .0   .0                                6.5     5.30    .52   9.79       2.23
 90-120      .6  3.6  5.6  3.8  1.0   .0   .0   .0   .0   .0   .0   .0   .0                               14.6     5.10    .28  10.31       2.11
120-150      .9  4.1  5.2  2.7   .2   .5   .0   .0   .0   .0   .0   .0   .0                               13.7     4.68    .52  11.86       2.37
150-180      .8  3.6  3.5   .7   .5   .0   .0   .0   .0   .0   .0   .0   .0                                9.3     4.14    .37  10.31       2.25
180-210      .6  2.2  2.0  1.3   .1   .0   .0   .0   .0   .0   .0   .0   .0                                6.2     4.28    .37   8.25       2.17
210-240     1.3  3.7  3.0  1.4   .8   .1   .0   .0   .0   .0   .0   .0   .0                               10.2     4.28    .41  11.34       2.50
240-270      .7  1.0  2.1  1.9   .7   .2   .1   .0   .0   .0   .0   .0   .0                                6.9     5.38    .52  12.89       2.91
270-300      .2  1.1  1.8  1.9   .3   .0   .0   .0   .0   .0   .0   .0   .0                                5.4     5.25    .52  10.31       2.38
300-330      .6  1.8  2.2  1.0   .2   .1   .0   .0   .0   .0   .0   .0   .0                                5.9     4.49   1.03  10.31       2.30
330-360      .5  1.6  1.4  1.2   .4   .2   .0   .0   .0   .0   .0   .0   .0                                5.5     5.04    .52  17.01       3.11
CALM        3.5                                                                                          3.5

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
 M/S          !    !    !    !    !    !    !    !    !    !    !    !    !
              2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    11.1 26.3 31.5 21.8  7.0  1.7   .5   .0   .0   .0   .0   .0   .0                              100.00
MEAN DIR    185  181  175  161  140  165   72  330  330    0    0    0    0
STD DEV      89   80   82   95   98  118   95    0    0    0    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   4.77 M/S            MAXIMUM =  17.01 M/S          MINIMUM =   .00 M/S              RANGE=  17.01 M/S
          STANDARD DEVIATION =  2.45 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =   -.58 M/S           STANDARD DEVIATION =   3.89 M/S
MEAN Y COMPONENT =    .63 M/S           STANDARD DEVIATION =   3.59 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: GDIL1              SPANNING 11/ 1  TO 11/30 YEARS: 1985 - 1987      2098 DATA POINTS -  97.1 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN   MIN   MAX      STD. DEV.
DEGREES                                                                                                            SPEED  SPEED  SPEED

  0- 30       .6  1.5  3.1  4.1  4.2  2.0  1.0   .2   .0   .0   .0   .0   .0                             16.8     7.30   1.0   15.46      3.36
 30- 60       .4  2.9  5.0  3.6  2.0   .3   .0   .0   .0   .0   .0   .0   .0                             14.2     5.53    .52  11.34      2.62
 60- 90       .3  5.3  4.7   .9   .0   .0   .0   .0   .0   .0   .0   .0   .0                             11.3     3.90    .52  13.40      2.19
 90-120       .3  5.7  8.1  3.2   .4   .0   .0   .0   .0   .0   .0   .0   .0                             17.7     4.62    .52   9.28      1.90
120-150       .5  3.7  6.7  1.9   .6   .1   .0   .0   .0   .0   .0   .0   .0                             13.5     4.55    .53  11.34      2.41
150-180       .0  1.4   .9   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                              2.4     3.69   1.55   8.25      1.86
180-210       .1   .7   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                              1.3     3.34   1.03   8.25      2.34
210-240       .1  1.2  1.6   .6   .0   .0   .0   .0   .0   .0   .0   .0   .0                              3.5     4.22   1.03   7.22      2.32
240-270       .1   .5   .5   .9   .4   .0   .0   .0   .0   .0   .0   .0   .0                              2.4     5.49   1.03   9.79      2.93
270-300       .3   .7  1.0   .6   .6   .2   .0   .0   .0   .0   .0   .0   .0                              3.4     5.68    .52  11.86      2.98
300-330       .1   .5  1.8  1.4   .8   .1   .0   .0   .0   .0   .0   .0   .0                              4.7     5.88   1.03  10.82      2.48
330-360       .1  1.0  1.6  1.6  1.0   .7   .5   .0   .0   .0   .0   .0   .0                              6.5     6.94   1.47  13.92      3.07
CALM         2.3                                                                                          2.3

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT      5.2 25.1 35.3 18.9 10.1  3.   1.5   .2   .0   .0   .0   .0   .0                            100.00
MEAN DIR     132  128  129  130  113  113  120   23    0    0    0    0    0
STD DEV       99   75   85  111  126  142  154   20    0    0    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEED =   5.23 M/S              MAXIMUM =  15.46 M/S           MINIMUM =   .00 M/S             RANGE =  15.46 M/S
             STANDARD DEVIATION =  2.61 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.78 M/S            STANDARD DEVIATION =   3.39 M/S
MEAN Y COMPONENT =  -1.42 M/S            STANDARD DEVIATION =   4.18 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: SRST2            SPANNING  4/ 1  TO  4/30 YEARS: 1985 - 1987     2160 DATA POINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                       PERCENT    MEAN    MIN    MAX     STD. DEV.
DEGREES                                                                                                         SPEED   SPEED  SPEED

  0- 30     .9  1.9  1.3   .4   .1   .0   .0   .0   .0   .0   .0   .0   .0                             4.7      3.59     .52   12.37      2.44
 30- 60     .7  3.0  1.7   .6   .4   .0   .0   .0   .0   .0   .0   .0   .0                             6.4      4.01     .52   10.31      2.29
 60- 90     .1  1.1   .6   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.9      3.68     .52    9.79      1.77
 90-120     .3   .3  1.8  1.9  1.4   .0   .0   .0   .0   .0   .0   .0   .0                             5.7      6.30     .25   10.82      2.37
120-150     .1  1.8  5.6  6.9  5.0  1.7   .6   .0   .0   .0   .0   .0   .0                            21.7      7.04     .52   13.40      2.42
150-180     .4  3.8  5.6  5.4  4.5   .6   .0   .0   .0   .0   .0   .0   .0                            20.4      6.20     .36   14.95      2.37
180-210     .5  2.4  2.3  1.3   .5   .3   .2   .0   .0   .0   .0   .0   .0                             7.5      5.06     .52   12.89      2.83
210-240     .4  2.6  3.7  1.9  1.4   .3   .0   .0   .0   .0   .0   .0   .0                            10.4      5.32     .52   10.82      2.59
240-270     .3  1.3   .7   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                             2.5      3.49    1.03    7.73      1.87
270-300     .6  3.6   .6   .2   .2   .0   .0   .0   .0   .0   .0   .0   .0                             5.3      3.34     .52    9.79      1.95
300-330    1.1  3.3   .6   .5   .1   .0   .0   .0   .0   .0   .0   .0   .0                             5.5      3.09     .52    8.25      2.03
330-360    1.3  3.0  1.3   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                             6.1      3.20     .52   10.82      2.04
CALM       1.9                                                                                          1.9

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    8.7 20.2 25.7 19.6 13.8  3.1   .9   .0   .0   .0   .0   .0   .0                          100.00
MEAN DIR   204  201  168  163  157  161  145  170    0    0    0    0    0
STD DEV    125  105   71   46   34   27   32    0    0    0    0    0    0


                                                 SUMMARY STATISTICS

MEAN SPEED =   5.21 M/S            MAXIMUM =  14.95 M/S          MINIMUM =   .00 M/S           RANGE =  14.95 M/S
           STANDARD DEVIATION =  2.72 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    -.94 M/S           STANDARD DEVIATION =   3.34 M/S
MEAN Y COMPONENT =    2.69 M/S           STANDARD DEVIATION =   3.90 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: SRST2               SPANNING 11/ 1  TO 11/30 YEARS: 1985 - 1987      2020 DATA POINTS -  93.5 PERCENT OF TOTAL

DIRECTION FROM                                                                                                   PERCENT      MEAN     MIN     MAX   STD. DEV.
DEGREES                                                                                                                      SPEED   SPEED   SPEED

  0- 30     1.6  4.7  5.2  1.7   .9   .1   .0   .0   .0   .0   .0   .0   .0                                         14.3      4.32     .52   10.82     2.41
 30- 60     1.2  5.9  2.9   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                                         10.4      3.47     .52   14.43     1.79
 60- 90      .5  3.2  2.4  1.3   .0   .1   .0   .0   .0   .0   .0   .0   .0                                          7.6      4.18    1.03   11.34     2.20
 90-120      .2  2.5  6.1  4.5   .8   .0   .0   .0   .0   .0   .0   .0   .0                                         14.2      5.34     .52   11.86     2.11
120-150      .5  3.5  7.4  4.4   .4   .0   .0   .0   .0   .0   .0   .0   .0                                         16.3      4.99     .52    9.28     1.96
150-180      .4  2.3  4.2  1.3   .3   .2   .0   .0   .0   .0   .0   .0   .0                                          8.7      4.93     .52   14.43     2.25
180-210      .2   .4   .6   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                          1.5      4.29     .52    8.25     2.27
210-240      .2  1.8   .8   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                                          3.0      3.52    1.03    8.25     1.78
240-270      .3   .7   .5   .2   .0   .0   .0   .0   .0   .0   .0   .0   .0                                          1.8      3.72     .52    8.76     2.09
270-300      .3  1.3   .5   .3   .3   .0   .0   .0   .0   .0   .0   .0   .0                                          2.9      4.17     .52    9.28     2.71
300-330     1.0  2.7  1.1   .4   .0   .0   .0   .0   .0   .0   .0   .0   .0                                          5.3      3.35     .52   11.34     2.19
330-360     1.7  4.9  2.9  1.4   .1   .0   .0   .0   .0   .0   .0   .0   .0                                         10.9      3.61     .52    9.28     2.17
CALM        3.0                                                                                                      3.0

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    11.3 33.8 34.7 16.3  3.2   .5   .0   .1   .0   .0   .0   .0   .0                                       100.00
MEAN DIR    174  156  137  141  125  117  170  115    0    0    0    0    0
STD DEV     132  117   91   83   94   89    0   53    0    0    0    0    0

                                                 SUMMARY STATISTICS

MEAN SPEED =   4.23 M/S             MAXIMUM =  14.43 M/S           MINIMUM =   .00 M/S             RANGE =  14.43 M/S
             STANDARD DEVIATION =  2.07 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.53 M/S           STANDARD DEVIATION =   2.82 M/S
MEAN Y COMPONENT =    .06 M/S           STANDARD DEVIATION =   3.45 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PTAT2               SPANNING  4/ 1  TO  4/30 YEARS: 1985 - 1987      1915 DATA POINTS -  88.7 PERCENT OF TOTAL

DIRECTION FROM                                                                                              PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                                SPEED   SPEED  SPEED

  0- 30      .2   .3   .7  1.0   .6   .6   .3   .0   .0   .0   .0   .0   .0                                    3.8      7.38    .52  12.89      3.35
 30- 60      .4  1.6  1.1  1.4  1.1   .5   .1   .0   .0   .0   .0   .0   .0                                    6.2      5.86   1.03  12.37      3.15
 60- 90      .5  2.2  3.9  3.6  1.5   .9   .3   .0   .0   .0   .0   .0   .0                                   13.0      6.11    .52  13.40      2.77
 90-120      .7  4.6  8.1  9.5  2.3   .7   .1   .1   .0   .0   .0   .0   .0                                   26.1      5.77    .52  15.98      2.31
120-150      .3  3.2  6.7 10.0  5.3  1.3   .3   .0   .0   .0   .0   .0   .0                                   27.1      6.52   1.55  13.40      2.42
150-180      .2  2.0  2.9  2.9  1.1   .5   .1   .0   .0   .0   .0   .0   .0                                    9.5      5.86    .52  12.37      2.49
180-210      .0   .2   .5   .4   .7   .0   .0   .0   .0   .0   .0   .0   .0                                    1.8      6.61   2.06   9.28      2.58
210-240      .3   .8   .6   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    2.1      3.99    .52   8.76      2.04
240-270      .3   .5   .0   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0                                     .9      3.06    .52   8.25      2.39
270-300      .5  1.3   .5   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    2.3      3.17    .52   8.76      2.00
300-330      .6  1.0   .4   .1   .1   .0   .0   .0   .0   .0   .0   .0   .0                                    2.1      2.90    .52   8.25      1.97
330-360      .1   .8   .4   .9   .4   .4   .0   .0   .0   .0   .0   .0   .0                                    3.0      6.28   1.55  11.86      2.87
CALM        2.1                                                                                                 2.1

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT     6.2 18.5 25.7 30.4 13.2  4.9  1.0   .1   .0   .0   .0   .0   .0                                 100.00
MEAN DIR    178  153  129  128  127  120   82  100    0    0    0    0    0
STD DEV     104   88   47   44   52   77   40    0    0    0    0    0    0

                                                      SUMMARY STATISTICS

MEAN SPEED =   5.82 M/S              MAXIMUM =  15.98 M/S            MINIMUM =   .00 M/S              RANGE =  15.98 M/S
          STANDARD DEVIATION =  2.65 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -3.53 M/S            STANDARD DEVIATION =   3.18 M/S
MEAN Y COMPONENT =   1.77 M/S            STANDARD DEVIATION =   3.89 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: PTAT2             SPANNING 11/ 1  TO 11/30 YEARS: 1985 - 1987     2160 DATA OINTS - 100.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                        PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                         SPEED   SPEED  SPEED

  0- 30      .4  1.0  1.6  4.0  2.7   .8   .2   .1   .0   .0   .0   .0   .0                            10.9     7.10     .52   15.90      2.77
 30- 60      .5  1.3  2.2  1.6  1.3   .4   .0   .0   .0   .0   .0   .0   .0                             7.3     5.74     .52   11.34      2.05
 60- 90     1.1  2.6  2.7  1.0   .0   .0   .0   .0   .0   .0   .0   .0   .0                             7.5     3.93     .52    9.79      1.99
 90-120      .8  2.4  4.9  4.7   .7   .1   .0   .0   .0   .0   .0   .0   .0                            13.6     5.30     .52   11.34      2.19
120-150      .4  2.4  5.8  7.8  3.7   .4   .0   .0   .0   .0   .0   .0   .0                            20.4     6.22     .52   10.82      2.23
150-180      .4  1.4  1.0  2.0   .3   .0   .0   .0   .0   .0   .0   .0   .0                             5.2     5.21     .52   12.37      2.59
180-210      .1   .6   .3   .1   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.1     3.53    1.55    6.19      2.00
210-240      .4   .9   .5   .0   .0   .0   .0   .0   .0   .0   .0   .0   .0                             1.7     2.78     .52    5.67      2.00
240-270      .3   .5   .1   .0   .1   .0   .0   .0   .0   .0   .0   .0   .0                             1.0     3.01    1.03    8.25      2.38
270-300      .5   .4   .4  1.1   .1   .0   .0   .0   .0   .0   .0   .0   .0                             2.4     4.94     .52    9.28      2.62
300-330      .8  2.1  1.8  1.6   .4   .2   .0   .0   .0   .0   .0   .0   .0                             6.9     4.78     .52   12.09      2.66
330-360      .7  3.4  4.1  5.4  2.4  1.0   .8   .1   .0   .0   .0   .0   .0                            17.9     6.33     .52   14.95      2.99
CALM        4.2                                                                                         4.2

 SPEED        0    2    4    6    8   10   12   14   16   18   20   22   24
              !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S          2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    10.4 18.9 25.4 29.3 11.8  2.9  1.1   .3   .0   .0   .0   .0   .0                          100.00
MEAN DIR    179  104  162  165  149  178  267  182    0    0    0    0    0
STD DEV     111  109  105  111  110  144  138  179    0    0    0    0    0

                                                SUMMARY STATISTICS

MEAN SPEED =   5.44 M/S               MAXIMUM =  15.98 M/S           MINIMUM =   .00 M/S             RANGE =  15.98 M/S
            STANDARD DEVIATION =  2.79 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =  -1.57 M/S           STANDARD DEVIATION =   3.36 M/S
MEAN Y COMPONENT =   -.04 M/S           STANDARD DEVIATION =   4.78 M/S
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D.3.4 OCEAN CURRENT MEASUREMENT PROGRAM (OCMP) PLATFORM

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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: E1331               SPANNING  4/ 1  TO  4/30 YEARS: 1973 - 1976       948 DATA POINTS -  32.9 PERCENT OF TOTAL

DIRECTION FROM                                                                                              PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                               SPEED   SPEED  SPEED

  0- 30     .1   .1   .1   .4   .3  1.1   .5   .1   .5   .4   .0   .0   .0                                   3.7    11.83    1.36   19.41      4.68
 30- 60     .0   .5   .0   .0   .1   .4   .0   .0   .0   .0   .0   .0   .0                                   1.1     7.05    2.52   11.99      3.55
 60- 90     .1   .6   .0   .1   .1   .1   .0   .0   .0   .0   .0   .0   .0                                   1.1      .54     .55   10.64      3.33
 90-120     .1   .1   .4  2.7  2.4  5.5   .9   .4   .0   .0   .0   .0   .0                                  12.7     9.65    1.82   15.08      2.58
120-150     .1   .2   .3  2.3  5.3  1.9  4.4  1.1   .2   .0   .0   .0   .0                                  15.8    10.32     .10   16.77      3.01
150-180     .2   .6   .7  2.5  2.1  1.5  2.7   .8   .3   .0   .0   .0   .0                                  11.6     9.76     .97   17.74      3.45
180-210     .0   .4   .5  1.5  1.7   .8   .3   .0   .0   .0   .0   .0   .0                                   5.3     8.13    2.45   12.81      2.54
210-240     .4   .1   .5   .6   .7   .8   .7   .0   .0   .0   .0   .0   .0                                   4.0     8.38    1.33   13.52      3.60
240-270     .6   .6   .5  3.5  1.5   .6   .1   .2   .0   .0   .0   .0   .0                                   7.7     7.05     .57   15.96      3.02
270-300     .0   .6   .7  2.0  3.9  2.2   .3   .7   .5   .0   .0   .0   .0                                  11.1     9.30    2.52   17.71      3.31
300-330     .1   .1   .9  1.4  1.8   .7  1.4   .4   .6   .3   .0   .0   .0                                   7.8    10.28    1.48   19.84      4.05
330-360    1.2  3.7  2.4  2.5  2.8  2.8  1.6   .7   .3   .1   .0   .0   .0                                  18.2     7.64     .20   18.13      4.01
CALM        .0                                                                                                .0

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    3.0  7.8  7.3 19.6 22.8 18.6 13.1  4.5  2.5   .8   .0   .0   .0                                 100.00
MEAN DIR   260  253  265  216  213  187  188  219  216  158    0    0    0
STD DEV     85  108   78   85   88  103   91   86  125  176    0    0    0

                                              SUMMARY STATISTICS

MEAN SPEE  =   9.08 M/S              MAXIMUM =  19.84 M/S             MINIMUM =   .10 M/S              RANGE =  19.74 M/S
          STANDARD DEVIATION =  3.65 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    .02 M/S            STANDARD DEVIATION =   6.62 M/S
MEAN Y COMPONENT =    .74 M/S            STANDARD DEVIATION =   7.17 M/S
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FREQUENCY DISTRIBUTION
 1.00 HOURLY DATA          STATION: E1331              SPANNING 11/ 1  TO 11/30 YEARS: 1972 - 1976      1568 DATA POINTS -  54.0 PERCENT OF TOTAL

DIRECTION FROM                                                                                          PERCENT    MEAN    MIN    MAX      STD. DEV.
DEGREES                                                                                                            SPEED   SPEED  SPEED

  0- 30     .2   .8  1.9  1.8  1.9  1.1   .1   .4   .0   .0   .0   .0   .0                                8.3    7.55    .42  15.53      3.14
 30- 60     .7   .8   .6  1.2  2.5  1.2   .3   .2   .0   .0   .0   .0   .0                                7.4    7.59    .01  15.08      3.48
 60- 90     .4   .4   .8  1.1  1.0  1.3   .3   .1   .0   .0   .0   .0   .0                                5.4    7.64    .14  14.69      3.75
 90-120     .3   .3   .6  1.8   .5   .1   .3   .4   .2   .0   .0   .0   .0                                4.5    7.90   1.16  16.30      3.88
120-150     .6   .8   .3  2.7  1.0   .6   .3   .3   .3   .0   .0   .0   .0                                6.7    7.54    .74  17.40      3.76
150-180     .7  1.7  1.0  2.1  2.6  1.7  2.2   .6   .1   .0   .0   .0   .0                               12.6    8.52    .76  16.04      3.70
180-210    2.0  1.4  1.6  2.4  2.6  2.7  1.0   .1   .0   .0   .0   .0   .0                               13.8    7.24    .04  14.52      3.58
210-240     .3   .4   .8  1.1   .8   .7   .0   .1   .0   .0   .0   .0   .0                                4.3    7.06    .86  14.97      2.71
240-270     .4   .7   .8  1.1   .8   .4   .0   .0   .0   .0   .0   .0   .0                                4.3    6.19    .05  11.82      2.94
270-300     .3  1.0   .4  2.2  2.4  2.7  1.1   .3   .1   .1   .0   .0   .0                               10.6    8.93    .88  19.40      3.44
300-330     .5  1.1  1.8  2.1  1.7  2.0  2.0   .6   .1   .0   .0   .0   .0                               11.9    8.53    .90  16.99      3.84
330-360     .8   .8   .5   .8  2.5  2.2  1.5  1.0   .1   .0   .0   .0   .0                               10.2    9.20    .02  17.10      4.00
CALM        .0                                                                                             .0

 SPEED       0    2    4    6    8   10   12   14   16   18   20   22   24
             !    !    !    !    !    !    !    !    !    !    !    !    !
 M/S         2    4    6    8   10   12   14   16   18   20   22   24   26

PERCENT    7.3 10.0 11.0 20.6 20.2 17.0  8.9  4.0   .8   .1   .0   .0   .0                              100.00
MEAN DIR   188  191  174  178  189  208  236  208  199  279    0    0    0
STD DEV     97  100  112   96  109  106   94  118   91    0    0    0    0

                                                  SUMMARY STATISTICS

MEAN SPEED =   8.00 M/S              MAXIMUM =  19.40 M/S            MINIMUM =   .01 M/S             RANGE =  19.39 M/S
            STANDARD DEVIATION =  3.69 M/S

IN A COORDINATE SYSTEM WHOSE Y AXIS IS POSITIONED     .00 DEGREES CLOCKWISE FROM TRUE NORTH
MEAN X COMPONENT =    .75 M/S            STANDARD DEVIATION =  5.57 M/S
MEAN Y COMPONENT =  -.23 M/S             STANDARD DEVIATION =  6.79 M/S
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END

9-18-91